Ask your Jobber or write for Free Copies of our latest cumulative Index and "How to File" Folders

TRADE NAME	MODEL	FOLDER NO.
Admiral	7T06, 7T12 (Ch. 4B1)	4714-1
Aircastle	5025	4714-2
Air King	A-510	4714-3
Airline	64BR-1513A, B; 64BR-1514A, B; 74BR-1513B, 74BR-1514B	4714-4
Airline	74BR-2701A	4714-5
Airline	74WG-925A	4714-6
Andrea	T-UI5	4714-7
Ansley	53	4714-8
Automatic	C-60X	4714-10
Bell Sound	3728M	4714-11
Belmont	6D120	4714-12
Coronado	43-8420	4714-13
Coronado	43-9201	4714-14
Decca	DP-11	4714-15
Electronic Laboratories (Orthosonic)	710PC, 710PB (Ch. 2887)	4714-16
Emerson	536A, 551A, 553A	4714-17
Farnsworth	GK-140, GK-141, GK-142, GK-143, GK-144	4714-18
Grantline	510-A	4714-19
Heath	HBR-5	4714-20
Masco	MA-121	4714-21
Mayfair	550, 550W	4714-22
Monitor	RA-50	4714-23
Seeburg	Record Changer L	4714-34
Sonora	RET-210	4714-24
Sonora	WGFU-241, WGFU-242	4714-25
Tele-Tone	148 (Ch. Series J)	4714-26
Temple	G-722	4714-27
Tone Pak	AC8HF	4714-28
Truetone	D-3720	4714-29
U. S. Television (Clearsonic)	5A66, 5B66, 5C66, 5D66MPA	4714-30
Watterson	4782	4714-31
Webster	Record Changer 50	4714-35
Woolaroc	3-6A/5	4714-32
Woolaroc	3-20A	4714-33

The PHOTOFACT Servicer

SEPTEMBER 1, 1947 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ VOL. 2, No. 24

ROBERT M. ELLIS, *Editor*

POST-VACATION RAMBLINGS

To acquire a much needed vacation, our desk was closed from July 21st to August 3rd. We had worked hard and we are proud of our record—over ten thousand letters on service problems answered this past year. Your Editor got as far from radio as possible by taking a jaunt through the Catskills and New England, but just couldn't keep his nose out of all service shops.

We had a real "lift" from reading our mail when we returned. Sure, we got a few brick-bats—but we got a lot more bouquets. Here are a few excerpts from letters that you will enjoy reading.

"I wish to say you are certainly doing a wonderful job for the Radio Service Engineer. Several years ago, I would have said what you are doing would be an impossibility at such a low cost."

Another tells us—

"I have been in business since 1920 and have a lot of money invested in other so-called manuals. Since your PHOTOFACTS arrived, these manuals have been collecting dust. Believe me I have saved a lot of money and time using your service."

Really warming to the cockles of our heart was this—

"The store has given me a $5.00 a week raise for the way I handle jobs, and without the help of PHOTOFACT diagrams I would probably have gotten lost in different circuit tracing, and voltage, and ohms measurement. They give me the ability to do my work more quickly, surely and save many hours——."

Incidentally, no PHOTOFACT testimonial has ever been paid for, either in cash or merchandise, nor has a testimonial ever been deliberately solicited. As long as we receive these expressions of appreciation from our patrons, our work will be a joy. Our purpose is always to help you.

★ ★

NEW PARTICIPATING MANUFACTURER

Radio service technicians will welcome the news that beginning with this issue, replacement transformers made by the Merit Coil and Transformer Corporation, 4427 North Clark Street, Chicago 40, Illinois, will be listed in the "Replacement Data" Columns of PHOTOFACT Folders.

No company is permitted to participate in our program without meeting requirements which include integrity, and facilities for national distribution. In addition, to be a participant, a company must actually manufacture the product, and have full control over its quality. The manufacturers who are listed in PHOTOFACT Folders are truly the "400" of the radio industry.

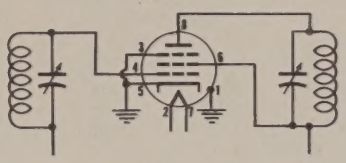
★ ★

THE TUBE BASING POLL

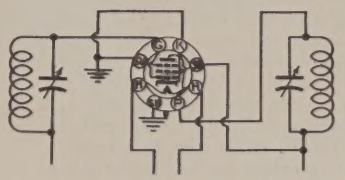
Frankly, we are tickled pink over the results of the tube basing poll, ballots for which were enclosed in PHOTOFACT Set No. 18. In political elections, results are sometimes uncertain; but this election was very different. From the first a definite trend was noted. It soon became apparent that radio technicians knew exactly what they wanted—the percentages have not changed materially since tabulation started. The preferred tube basing type designation is Method No. 3; it has maintained a clear majority of almost 50% over other methods. Needless to say, Method 3 is the one used in the new PHOTOFACT "Standard Notation Schematics."

You will be interested in knowing that the Radio Manufacturers Association has been kept informed of the results of our poll; and they have expressed a keen interest in it. A bulletin from their engineering department, and prepared for the benefit of RMA members, reproduced the PHOTOFACT Ballot, and brought an interim report, which gave results substantially the same as listed in this article.

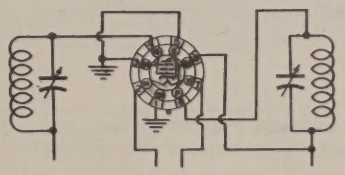
As of August 1st, 1947, the relative standing of the three most popular methods were—



Method 3
THE WINNER!
35.0% of the Votes



Method 7
THE RUNNER UP
24.2% of the Votes



Method 6
THIRD PLACE
22.2% of the Votes

The vote for the remaining four methods totaled only 18.4% which was distributed as follows—Method 4, 8.9%; Method 5, 7.5%; Method 2, 1.6%; Method No. 1, 0.4%.

Your clear-cut decision on this point of the schematic standardization program has benefited the entire industry and has helped us to help you by providing the kind of service data you want. So we say, in behalf of the Industry, thanks a million.

★ ★

WHO DID IT?

One of our patrons has returned one of the overprinted advertising editions of PHOTOFACT Folder 4610-8, and has "endorsed" it with a number of pithy and helpful comments, including a suggestion on numbering.

Will this patron please write and identify himself? We would like to thank him.

★ ★

PERSONAL HELP ON TECHNICAL PROBLEMS

It has been a pleasure to help our patrons by supplying special technical information, trouble diagnosis and service procedure data on radio receivers and allied electronic equipment; but we are faced with a serious problem on the kind of inquiries many of you have submitted to us.

As you know, PHOTOFACT Service begins with post-war sets. We can easily give you the information you need on any equipment produced from early 1946 on. But when we get an inquiry on a pre-war model, say of 1938 or 1935 vintage, or earlier, we have a research job on our hands. Our service files are undoubtedly among the best in the country, but it actually takes hours to dig up data on pre-war models. We estimate conservatively that it costs us over $3.00 to answer an average inquiry on a pre-war set. In little more than a year, we've spent over $30,000.00 answering over ten thousand such inquiries and have never asked for one cent in return.

The only way we can continue to help you *on pre-war models* is to ask you to help us. When you send in an inquiry on a pre-war model, won't you please remit $1.00 to help us cover at least a part of our cost? If we can't help you, we will gladly refund your money.

On *post-war models*, there will be no charge for the service—we have the information at our fingertips.

★

THEN, THERE IS THE MATTER OF PHOTOSTATS—

Expansion always results in "growing pains" and our own business is no exception to the rule. The necessity of moving our service literature files and the attendant rearrangement has kept us from giving as good service as we would like—especially on providing photostats of schematics of pre-war model receivers. You can anticipate a big improvement in this service in the near future.

To new patrons who have not used this service, we should say that Howard W. Sams & Co., Inc., has acquired a very fine library of factory service manuals and schematic diagrams extending back over a period of some twenty years. When not restricted by copyright notice, we can supply photostatic copies of diagrams to patrons at our cost which is 50¢ *per 8½" x 11" page.*

In the past, this service has been rendered on an "open account" basis in order that diagrams may be delivered with the minimum delay to patrons who need them for completing repairs. The amounts involved are not enough to warrant the establishment of an elaborate bookkeeping system, and we have left it up to the honesty of our patrons to remit as required. We hope we can continue this system, as service technicians tell us it is a wonderful help. To do so, calls for your co-operation in remitting promptly. With the hundreds of requests we receive each month, it is impossible to absorb the cost of making photostats.

Please send your remittance with your order, or pay promptly upon the receipt of the photostats.

★ ★

JUST TO REMIND YOU

Here are two items that are a *must* for every PHOTOFACT user—and they are free. If you have mislaid your copies, write us for replacements.

You need the brochure—

"5 Good Ways to File PHOTOFACT Folders" because it tells you how PHOTOFACT Folders can be filed to provide the maximum benefit to your shop with the minimum filing time. It describes the new "30-second" filing system that so many are adopting.

You need the folder—

"Cumulative Index," which lists all the receivers covered by PHOTOFACT Folder Sets Nos. 1 through 20, and which contains a number of helpful cross-references. The Cumulative Index is indispensable if you use the "30-second" filing method.

★ ★

FIELD EXPERIENCES

Here is your opportunity for passing practical service experiences to others for the benefit of all. For every service "Field Experience" published, we issue to the author a certificate that is good for one PHOTOFACT Folder Set. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Company, Inc.

★

OUR APOLOGY—

Deleted by our printer because of lack of space, and not discovered until too late for correction, was the inadvertent omission of the acknowledgment of the "Field Experiences" in Servicer No. 23 covering the Westinghouse H-110 and H-125, H-126. These were submitted by Mr. W. G. Mumper, Westinghouse Electric Supply Company, 575 Sixth Avenue, Pittsburgh 19, Pennsylvania, who also gives us the following:

WESTINGHOUSE H-104, H-105, H-107, H-108, and H-110

(Photofact Set No. 4—464-11 and 464-19)

"Westinghouse Models H-104, H-105, H-107, H-108, H-110, an existing condition of double tuning can be eliminated by proper alignment of the broadcast antenna trimmer."

WESTINGHOUSE V-3269-1 and V-3630-1

"In Westinghouse Models V-3269-1 and V-3630-1 record changers which are similar to General Instrument changers, the condition of not dropping records properly may be caused by the feed sector assembly being out of alignment at the pivot post. This may be corrected by moving the sector lever and bending into alignment."

EDITOR'S NOTE: For service notes on a similar changer see the PHOTOFACT Folder on the General Instrument No. 204 in PHOTOFACT Set No. 23.

★

EMERSON 540 A

(Photofact Set No. 20—4710-10)

"Complaint: Intermittent hum and distortion—all components check o.k.

"The trouble was traced to a poor contact between the 50B5 pins and socket. We found that by bending the solder lugs on the socket slightly toward the chassis, a better grip was obtained, and this procedure eliminated the necessity of changing the socket."

MAGUIRE ARC-1 RECORD CHANGER

(Photofact Set No. 7)

"Complaint: Mechanism tripped before completion of records. The adjustments listed in the PHOTOFACT Folder did not remedy the condition.

"The trouble was found to be loose pivot set screws in the tone arm. After taking up the play in these set screws, a little cement will serve to hold them secure. A better procedure would probably be to replace these set screws with longer ones carrying lock-nuts, although this might hamper the appearance slightly."

Submitted by. Mr. J. Guberman, Wilco Radio Service, 284 Liberty Avenue, Brooklyn 7, New York

★

R.C.A. VICTOR 59AV1

(Photofact Set No. 6—466-25)

"Intermittent operation may be due to unsoldered connections on i.f. trimmers or intermittent fabricated plate type filter condensers."

R.C.A. VICTOR 612V1, -V2 AND -V3

(Photofact Set No. 17—477-27)

"Complaint. Noise and intermittent operation.

"Look for loose connections under r.f. chassis assembly or 6BA6 and 6BE6 sockets. Distortion or poor operation on FM and phonograph only may be due to defective 6AU6 tube used as first phono amplifier and FM driver."

PHILCO 46-480

(Photofact Set No. 19—479-25)

"Motorboating may be due to a defective discriminator transformer. One of the trimmers in this assembly sometimes becomes defective and places a high positive voltage on the diode plates of the discriminator tube. The cure is replacement of transformer. If the transformer is unavailable, disassemble the trimmer and remove the bottom mica strip which is silver plated on one side. Discard this strip and reassemble the trimmer. Add a 100 mmf. mica capacitor across trimmer terminals, reassemble transformer and replace in the set. After complete realignment, the set will function normally."

Submitted by: Mr. R. W. Tackett, Emerson Piano House, Inc., 143-145 N. Main Street, Decatur, Illinois

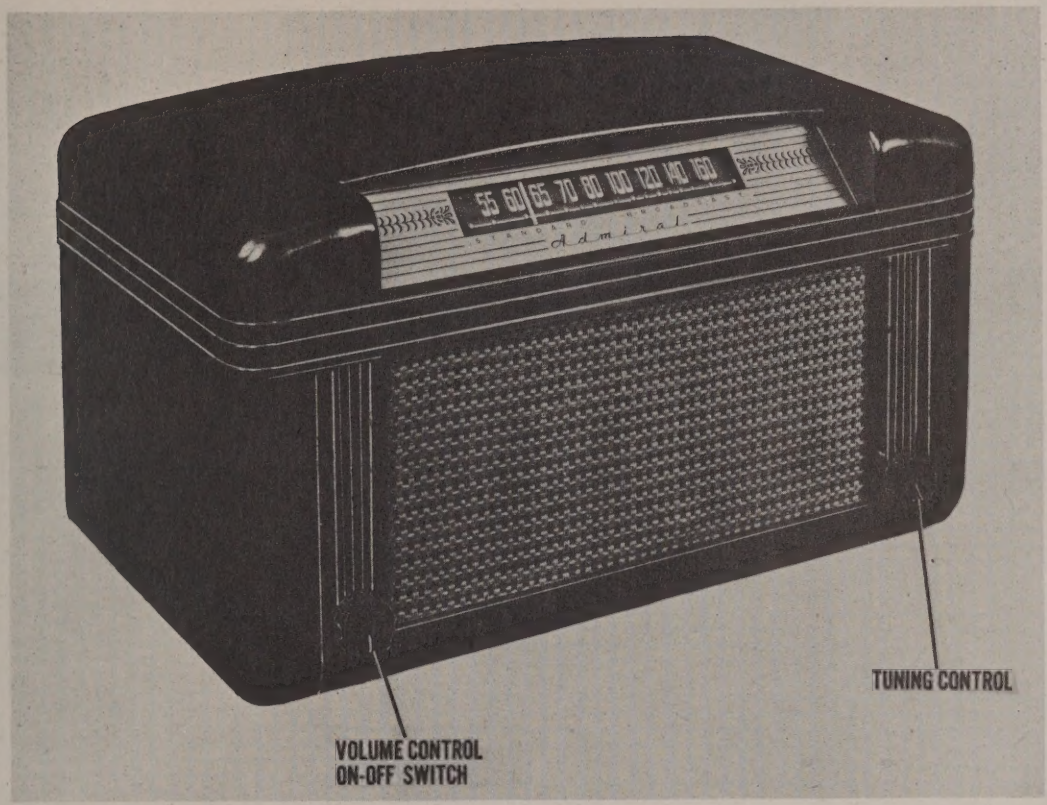
PUBLICATION DATES

When will other sets of PHOTOFACT Folders be published?

Volume 3—Set No. 25 ..... **October 15**
Volume 3—Set No. 26 ..... **October 15**
Volume 3—Set No. 27 ..... **November 15**
Volume 3—Set No. 28 ..... **November 15**

If you have been unable to get any issues of PHOTOFACT *Folder Sets, send your order and money directly to us and we will see that you are supplied.*

ADMIRAL CHASSIS MODEL 4B1
BATTERY OPERATED



ADMIRAL CHASSIS MODEL 4B1
BATTERY OPERATED

ADMIRAL MODEL 7T12

TRADE NAME	Admiral, Models 7T06, 7T12 (Chassis 4B1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago, Ill.
TYPE SET	Battery Operated Superheterodyne Receiver.
TUBES (FOUR)	Types, 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5 Power Output.
POWER SUPPLY RATING	1½ Volt "A" Supply & 90 Volt "B" Supply in Pack Form 240 MA @ 1.5 Volts DC & 14MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1630KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning control fully counter-clockwise and set the left edge of the pointer 2-1/4" from left edge of dial backplate. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output read ng. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to grid cap. of 1A7 Low side to chassis.	455KC	Tuning control fully clockwise.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	200MMF.	High side to ant. lead. Low side to chassis.	1630KC	"	"	A5	Check to see that cores of ant and oscillator coils are 1-3/8" or more out of coils. If they are not adjust A7 and A8 so that they are. After checking these coils adjust A5 for maximum output.
3	200 MMF.	"	1630KC	"	"	A6	Adjust for maximum output.
4	200 MMF	"	1300KC	Left edge of pointer 6-31/32" from left edge of dial backplate.	"	A7,A8.	Adjust for maximum output in order given.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	4	150	67A4-2	BR415	TC40	M-4-150	UT-41	PRS150-4	Filter
6	.005	600	64B1-12	DT6D5	TP408	S-6-005	TC-25	684-005	Output Plate Bypass
7	.01	400	64B1-25	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
8	.01	400	64B1-25	DT4S1	TP421	S-4-01	TC-11	484-01	"
9	.05	200	64B1-32	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
10	.01	400	64B1-25	DT4S1	TP421	S-4-01	TC-11	484-01	IF Plate Decoup.
11	.002	600	64B1-14	DT6D2	TP405	S-6-002	TC-22	684-002	IF Grid Filter
12	.01	400	64B1-25	DT4S1	TP421	S-4-01	TC-11	484-01	Conv. Screen Bypass
13	.01	400	64B1-25	DT4S1	TP421	S-4-01	TC-11	484-01	Osc. Feedback †
14	.01	400	64B1-25	DT4S1	TP421	S-4-01	TC-11	484-01	Ant. Coupling
15	250	500	65B7-22	5W5T25	MC240	M0.5-325	1FM-325	1468-00025	AF Plate Bypass
16	250	500	65B7-22	5W5T25	MC240	M0.5-325	1FM-325	1468-00025	Diode Filter
17	100	500	65B7-17	5W5T1	MC235	M0.5-31	1FM-31	1468-0001	Osc. Grid Cap.
18	800	500	65B5-31	1W5T8	MC251	M0.3-38	MS-38	1464-0008	Fixed Padder
19	800	500	65B5-31	1W5T8	MC251	M0.3-38	MS-38	1464-0008	" "
20	220	500		5W5T2	MC237	M0.5-32	1FM-32	1468-0002	Fixed Trimmer
21	140	500		5W5T15	MC236	M0.5-315	1FM-315	1469-00015	" "

† Not used in early models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	1 Meg.	1	75B1-1	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

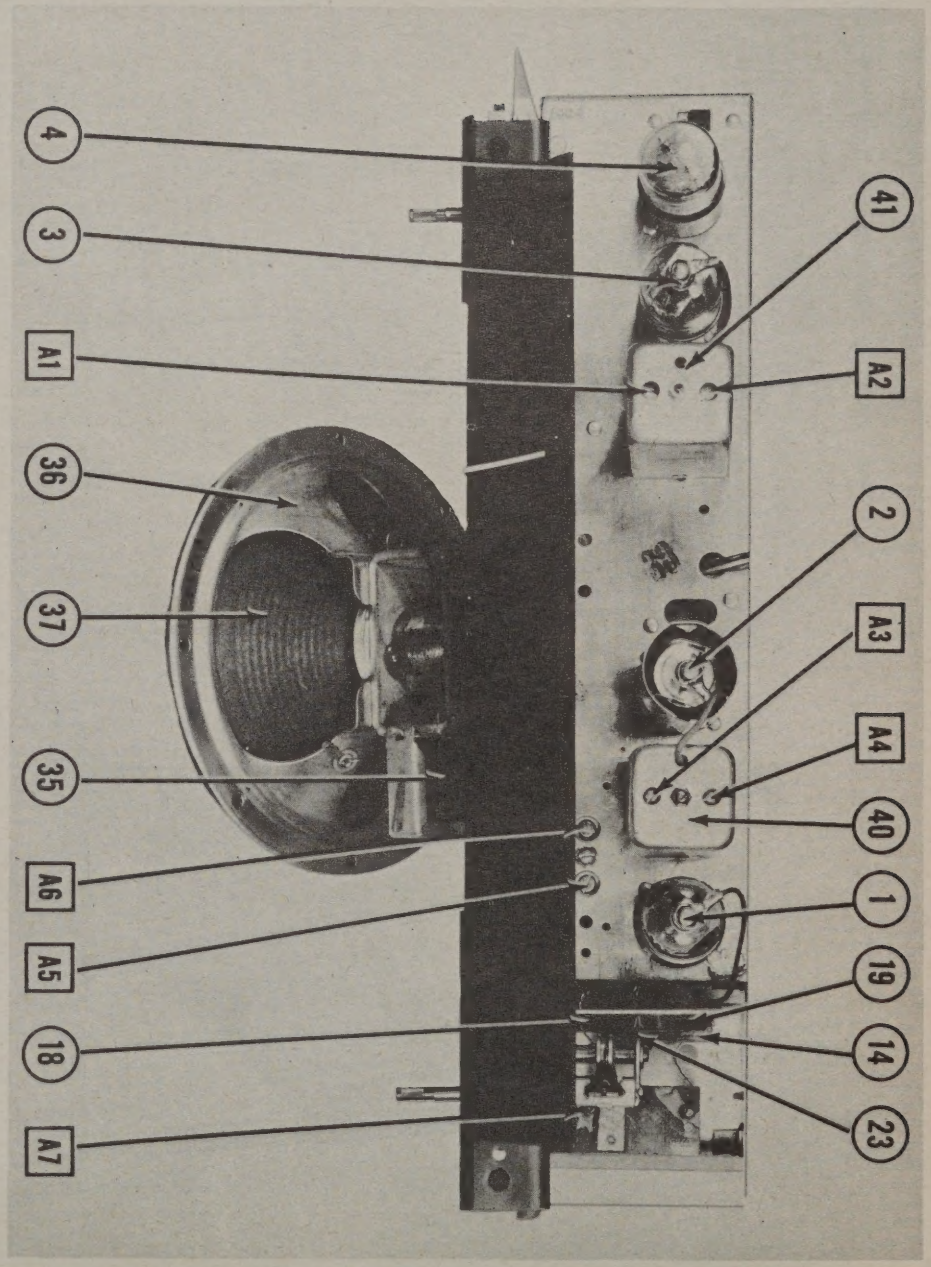
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
23	15KΩ	½	60B8-153	BTS-15K	Br.-Grn.-Or. External Antenna Loading
24	470KΩ	¼	60B2-474	BTS-470K	Yl.-Vi.-Yl. AVC Network
25	220KΩ	¼	60B8-224	BTS-220K	Red-Red-Yl. Oscillator Grid
26	33KΩ	½	60B8-333	BTS-33K	Or.-Or.-Or. Converter Screen Dropping
27	4.7 Meg.	¼	60B2-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. IF Grid
28	2200Ω	¼	60B2-222	BTS-2200	Red-Red-Red IF Plate Decoupling
29	2.2 Meg.	¼	60B2-225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
30	4.7 Meg.	¼	60B2-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
31	1 Meg.	¼	60B2-105	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
32	1 Meg.	¼	60B2-105	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
33	390Ω	¼	60B2-391	BW-¼-390	Or.-White-Br. Bias Network
34	.75Ω	½	61A2-1	BW-½-.68	Vi.-Grn.-Silver Battery Saver

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
35	6800Ω	2.7Ω	750Ω	.66Ω	Part of 78B3	A-3878*	T22S47*	A-3931 *	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: JENSEN PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-112	
36	PM	2.7Ω	78B3	Mod. P6-T	
	CONE DIA.	VC DIA.			
37	5-7/8"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

R F COILS

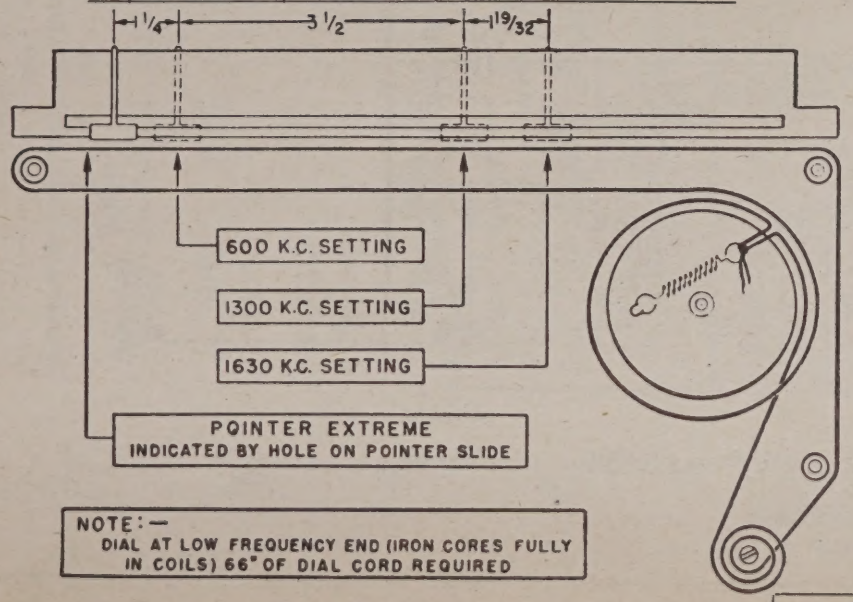
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: MEISSNER PART No.
38	Ant. Coil	3.5Ω		AC-105-1	
39	Osc. Coil	8Ω		A-1020	
40	Input IF	14.5Ω	18Ω	72B5	16-6658
41	Output IF	16.5Ω	13.5Ω	72B6	16-6660
42	Choke (RF)	16Ω		AB-103-1	

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
43	1½V "A" 90V "B"				758	

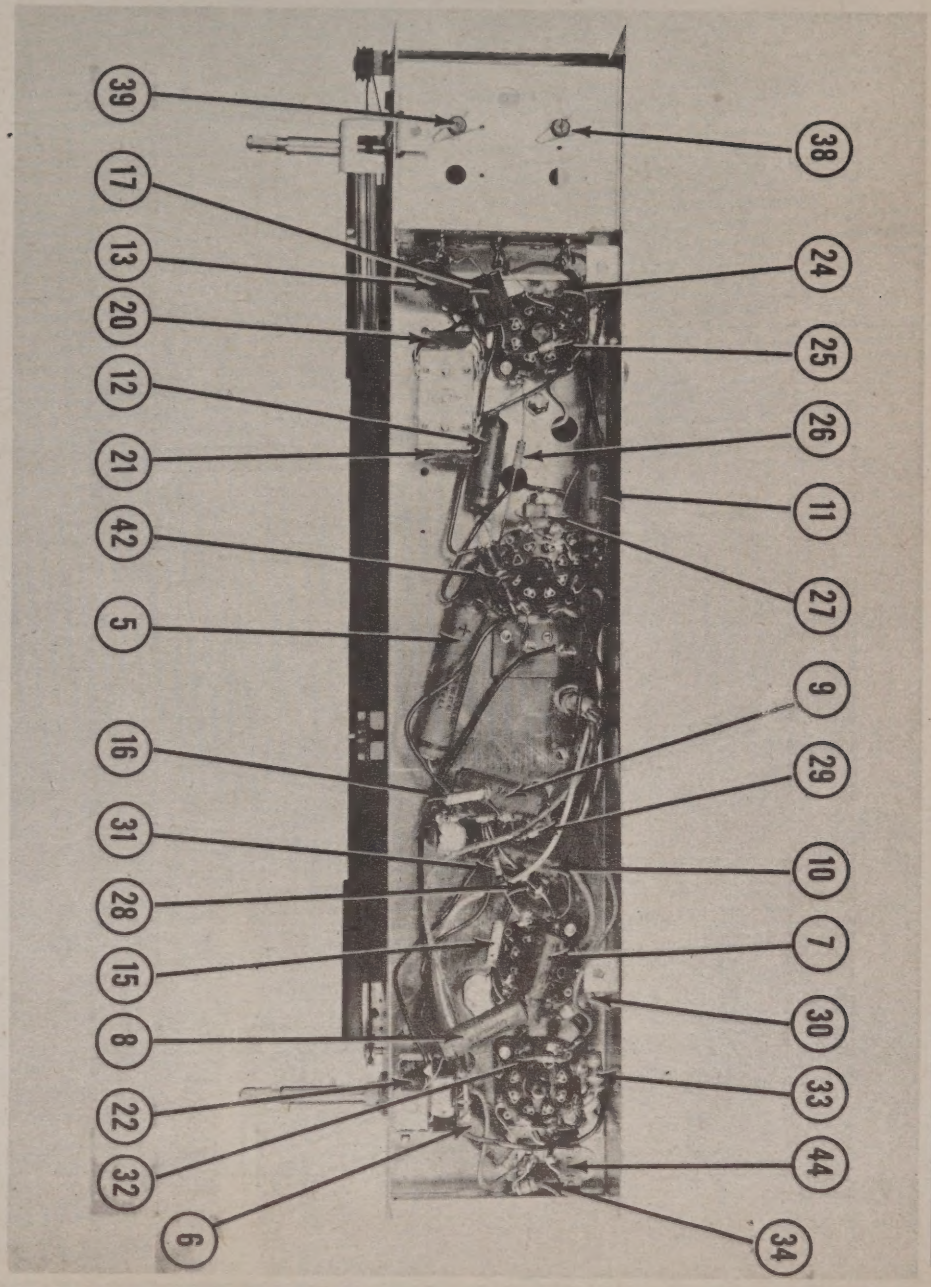
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
44	Switch	77B1-6	Economizer
A5 } A6	Dual Trimmer	66A9-1	{ Osc. Adj. Ant. Adj.
	Dial Pointer	25A9-1	
	Dial Scale	21B31-1	Model 7T06
	Dial Scale	21B32-1	" 7T12



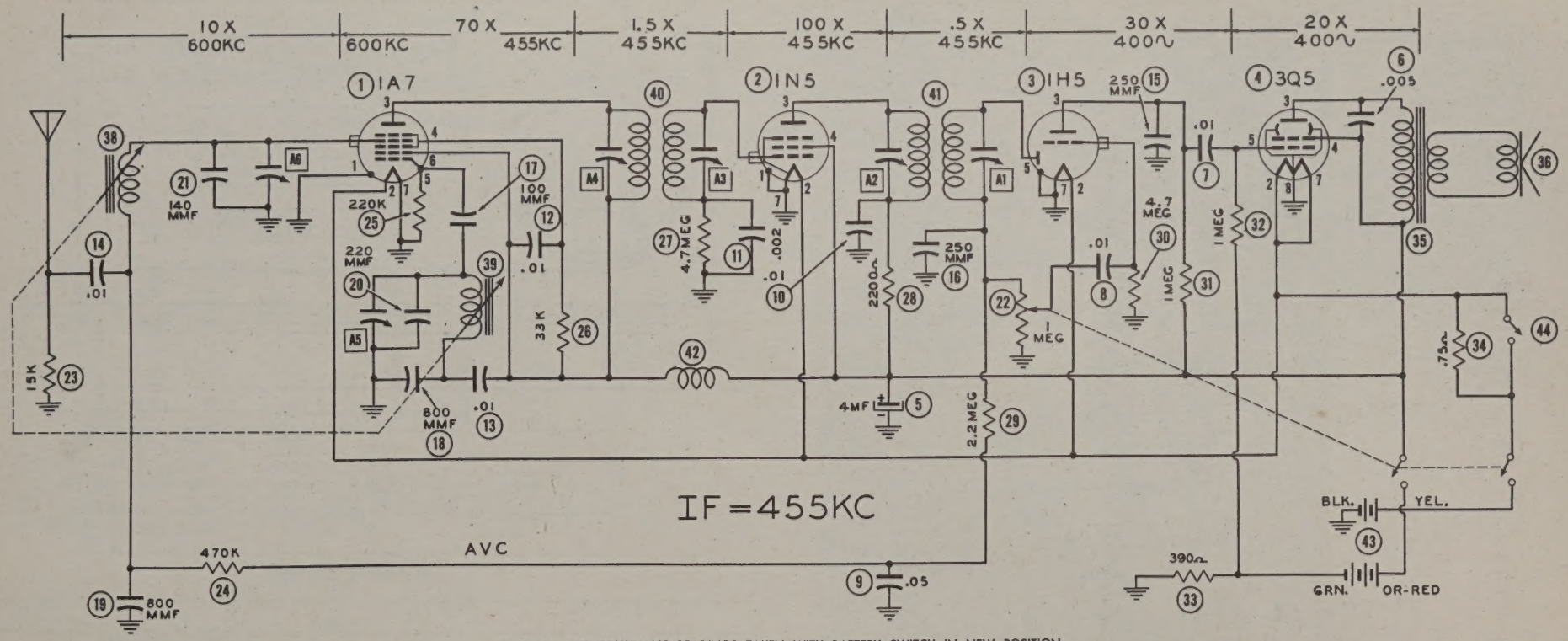
NOTE:—
DIAL AT LOW FREQUENCY END (IRON CORES FULLY IN COILS) 66° OF DIAL CORD REQUIRED

CHASSIS—BOTTOM VIEW



ADMIRAL CHASSIS MODEL 4B1
BATTERY OPERATED

ADMIRAL CHASSIS MODEL 4B1
BATTERY OPERATED



VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN WITH BATTERY SWITCH IN NEW POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	1.35VDC	87VDC	50VDC	-3VDC§	87VDC	0V.	0V.	0V.
2	1N5GT	0V.	1.35VDC	85VDC	87VDC	0V.	87VDC	0V.	0V.	0V.
3	1H5GT	0V.	0V.	55VDC	85VDC	-.2VDC	0V.	1.35VDC	0V.	0V.
4	3Q5GT	0V.	1.35VDC	80VDC	87VDC	-1.4VDC	-5.6VDC	1.35VDC	0V.	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0Ω	*	80KΩ	115KΩ	210KΩ	80KΩ	0Ω	3 Meg.	3.5 Meg.
2	1N5GT	0Ω	*	80KΩ	80KΩ	INF.	80KΩ	0Ω	4.5 Meg.	4.5 Meg.
3	1H5GT	0Ω	0Ω	1 Meg.	80KΩ	900KΩ	4.5 Meg.	*	INF.	4.5 Meg.
4	3Q5GT	0Ω	*	80KΩ	80KΩ	1 Meg.	400Ω	*	0Ω	-

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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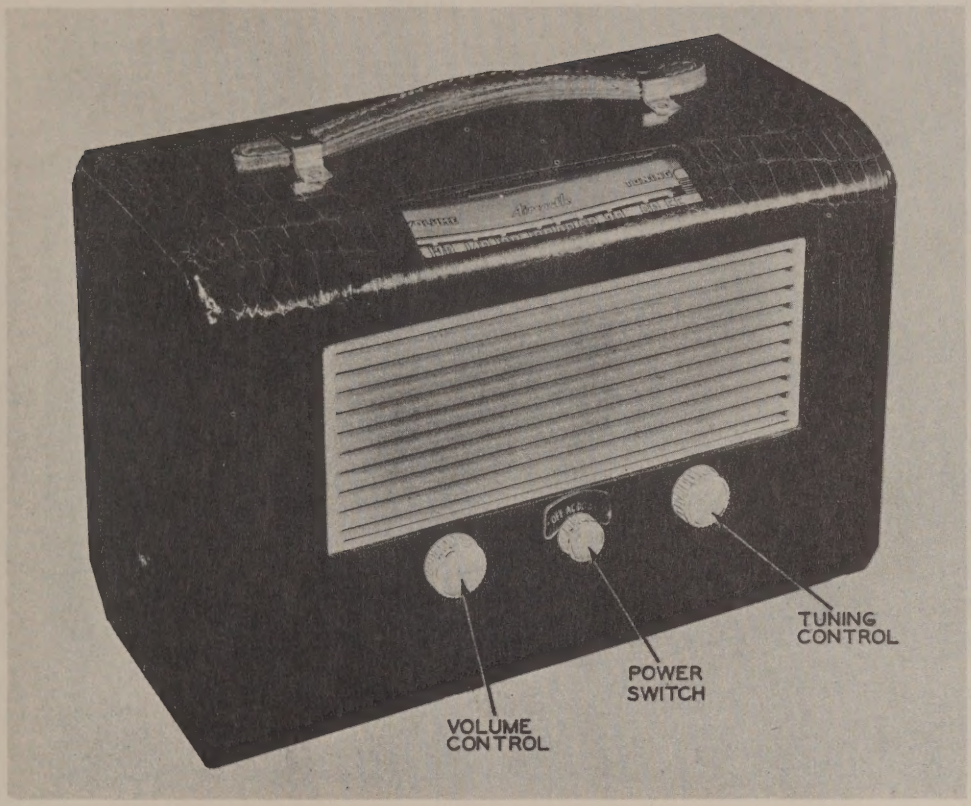
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment etc., that an absolute reading is impractical. AVC is shorted to chassis during stage gain measurements.

1. DC Voltage measurements are at 20,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

AIRCASTLE MODEL 5025
BATTERY OPERATED



AIRCASTLE MODEL 5025
BATTERY OPERATED

AIRCASTLE MODEL 5025

TRADE NAME	Aircastle, Model 5025
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output.
POWER SUPPLY	110-120 Volts AC-DC or 9 Volts "A" Supply & 90 Volt "B" Supply
RATING	.160 Amp. @ 117 Volts AC or 11 MA @ 90 Volts DC or 50 MA @ 9 Volts DC
TUNING RANGE—BROADCAST	540-1720KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning capacitor. Low side to B-.	455KC	Tuning capacitor fully open	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	"	1720KC	"	"	A5	Adjust for maximum output.
3	200MMF.	High side to ext. ant. lead. Low side to chassis.	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL 5025
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	EC-4	UP6CJ44	FP357	DY-3x40-150	EL-340	AF88D	■ Filter
B	40	150							▲ "
C	40	150						PRS150-40	"
6	70	10	EC-6	BRH121	TC2501	M-100-25	UHC-112	PRS25-100	Fil. Bypass
7	.05	400	PC-5	DT4S5	TP426	MPW-4-05	TC-15	484-05	Line Bypass
8	.005	600	PC-6	DT6D5	TP408	S-6-005	TC-25	684-005	Output Plate Bypass
9	.005	600	PC-6	DT6D5	TP408	S-6-005	TC-25	684-005	Audio Coupling
10	.05	400	PC-5	DT4S5	TP426	S-4-05	TC-15	484-05	Audio Plate Decoup.
11	.005	600	PC-6	DT6D5	TP408	S-6-005	TC-25	684-005	Audio Coupling
12	.1	400	PC-8	DT4P1	TP428	S-4-1	TC-1	484-.1	Fil. Bypass
13	.05	400	PC-5	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
14	.05	400	PC-5	DT4S5	TP426	S-4-05	TC-15	484-05	Conv. Screen Bypass
15	.1	400	PC-8	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
16	100	500	MC-2	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AF Plate Bypass
17	100	500	MC-2	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
18	100	500	MC-2	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Cap.

CONTROLS

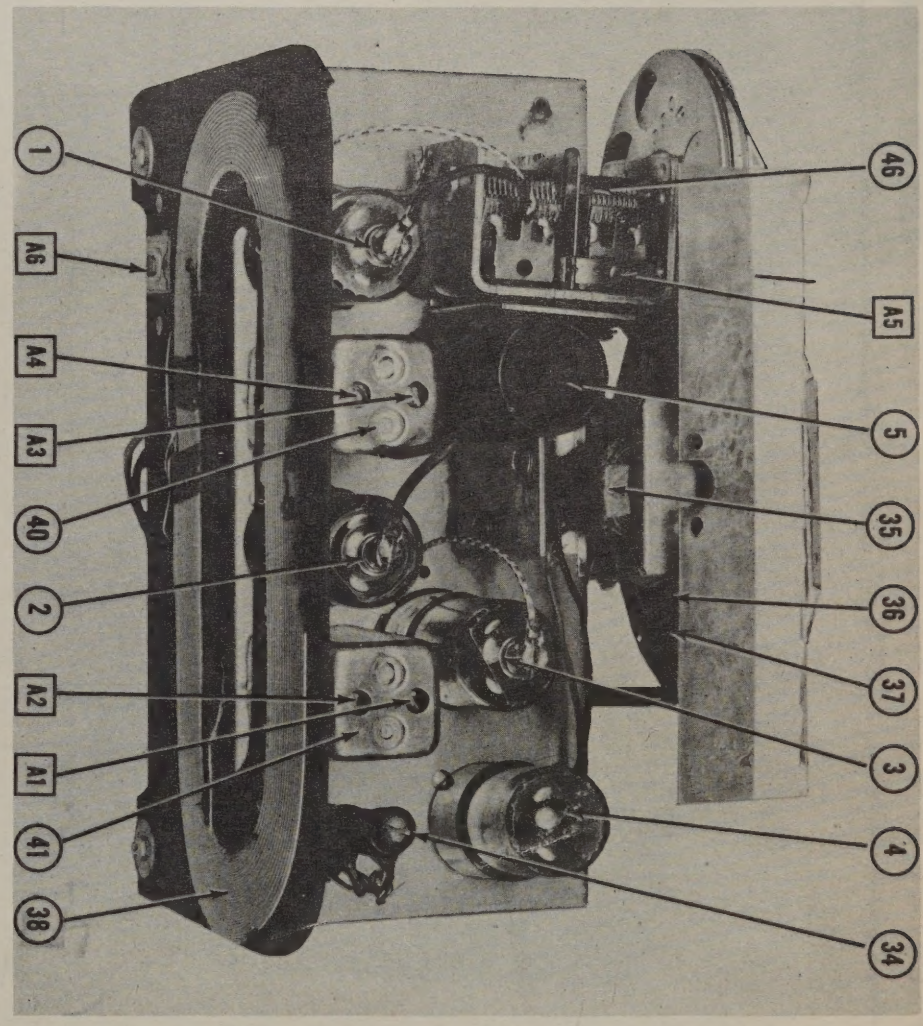
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
19A	1 Meg.	1	VC-2	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
20	220KΩ	½	1R-20	BTS-220K	Red-Red-Yl. Oscillator Grid
21	22KΩ	½		BTS-22K	Red-Red-Or. Converter Grid - See Note 1
22	220KΩ	½	1R-20	BTS-220K	Red-Red-Yl. Line Isolation
23	3.3 Meg.	½	1R-23	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
24	82KΩ	½	1R-31	BTS-82K	Gray-Red-Or. Diode RF Filter
25	10 Meg.	½	1R-3	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
26	1 Meg.	½	1R-12	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
27	470KΩ	½	1R-11	BTS-470K	Yl.-Vi.-Yl. AF Plate Decoupling
28	2.2 Meg.	½	1R-13	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
29	620Ω	½	1R-32	BTS-680	Blue-Red-Br. Filament String
30	270Ω	½	1R-33	BW-½-270	Red-Vi.-Br. " "
31	330Ω	½	1R-21	BW-½-330	Or.-Or.-Br. " "
32	1200Ω	½	1R-34	BTS-1200	Br.-Red-Red Filter - See Note 2
33	75Ω	2	1R-35	BW-2-82	Vi.-Grn.-Blk. Surge Limiter
34A	1050Ω		WR-3		Filament String
B	1050Ω				" "
C	55Ω				" "

Note 1 - Some models use 47KΩ in this application.
Note 2 - Some models use 2-600 resistors in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
35	6400Ω	3.1Ω	250Ω	.4Ω	Part of SPK-5	A-3878*	T22S46*	A-2931*	*Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
36	PM	3.1Ω	SPK-5	ST-105†		†Trim flange to clear controls.
	CONE DIA.	VC DIA.				
37	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

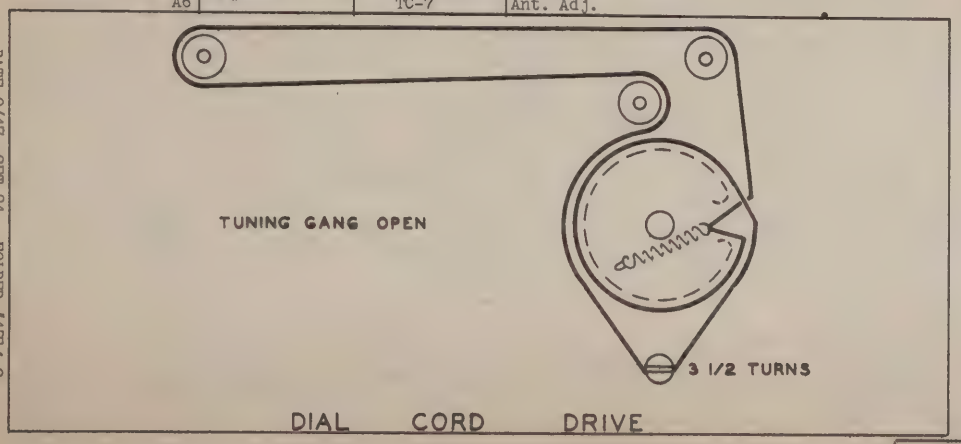
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	
38	Loop Ant.	.1	1.5Ω	LL-5		
39	Osc. Coil	.3	1Ω	LO-8	14-1040	
40	Input IF	19Ω	20Ω	LI-3	16-6666	
41	Output IF	19.5Ω	19Ω	LI-4	16-6667	

BATTERIES

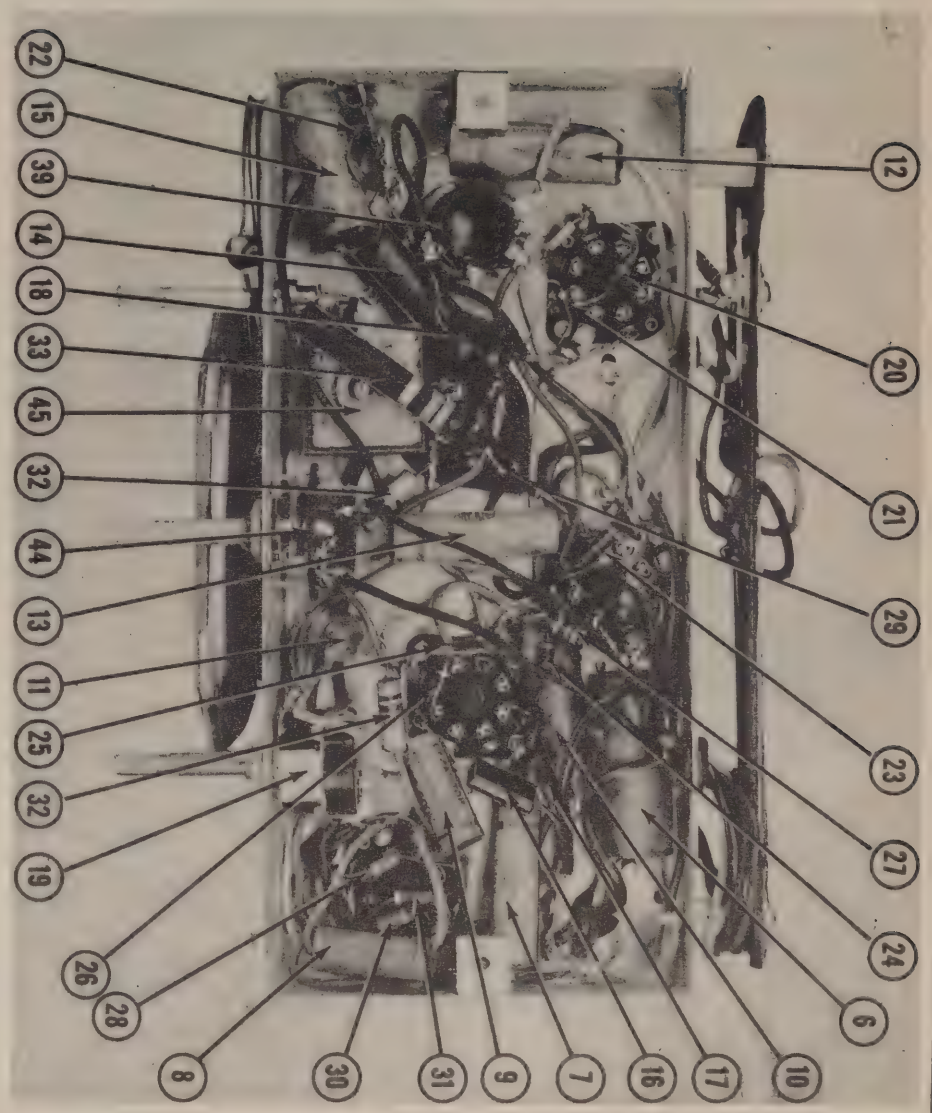
ITEM No.	VOLTAGE	AIRCASTLE PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
42	9 V."A"		746			2 Used in Series
43	90V."B"			482		" " " "

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
44	Switch	SW-5	Power Change-Over
45	Rectifier	SR-1	Selenium
46	2 Gang Var. Cap	GC-2	8-368 MMF, 29-194 MMF
A5	Trimmer	TC-6	Osc. Adj.
A6	"	TC-7	Ant. Adj.

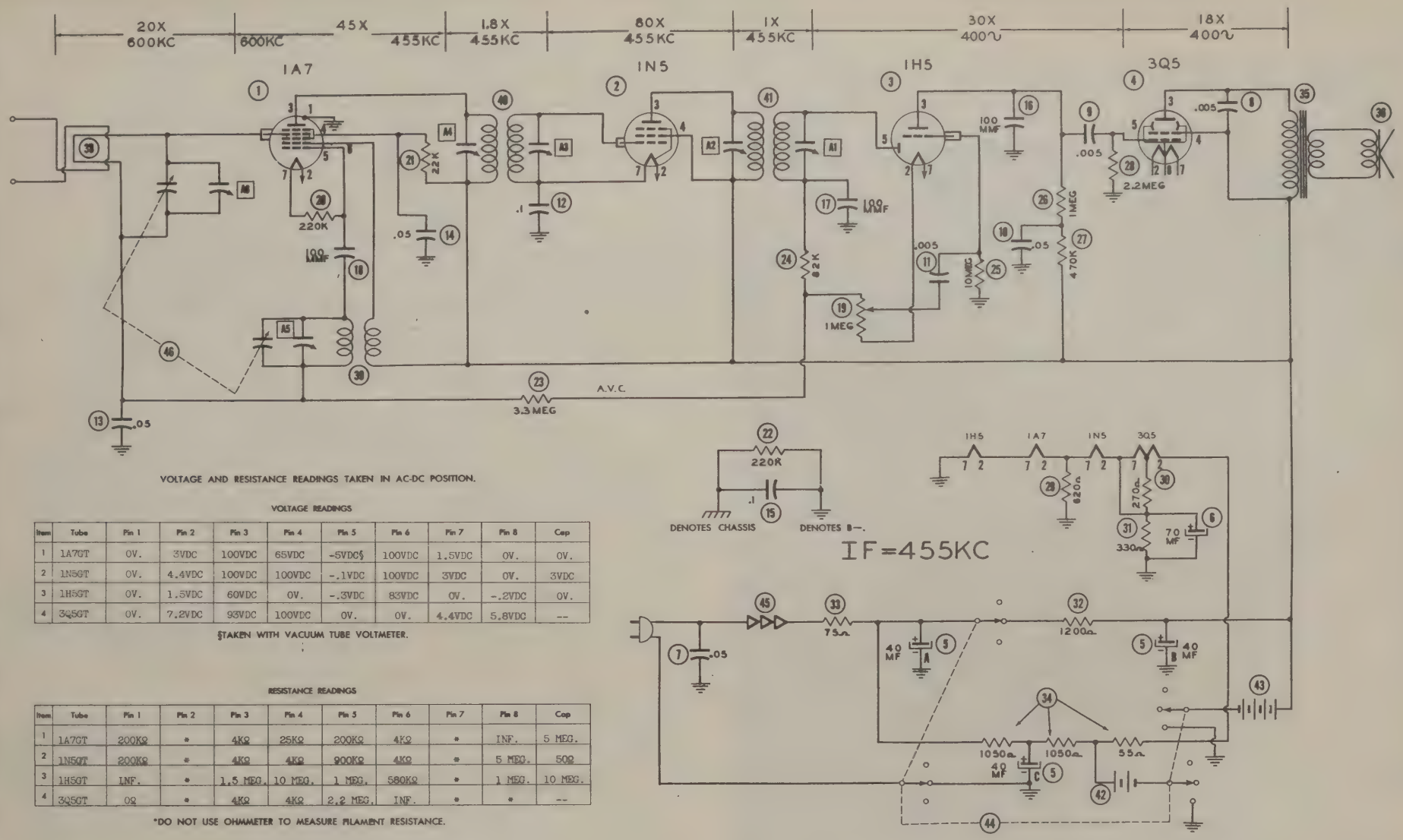


CHASSIS—BOTTOM VIEW



AIRCASTLE MODEL 5025 BATTERY OPERATED

AIRCASTLE MODEL 5025 BATTERY OPERATED



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	3VDC	100VDC	65VDC	-5VDC§	100VDC	1.5VDC	0V.	0V.
2	1N5GT	0V.	4.4VDC	100VDC	100VDC	-.1VDC	100VDC	3VDC	0V.	3VDC
3	1H5GT	0V.	1.5VDC	60VDC	0V.	-.3VDC	83VDC	0V.	-.2VDC	0V.
4	3Q5GT	0V.	7.2VDC	93VDC	100VDC	0V.	0V.	4.4VDC	5.8VDC	--

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	200KΩ	*	4KΩ	25KΩ	200KΩ	4KΩ	*	INF.	5 MEG.
2	1N5GT	200KΩ	*	4KΩ	4KΩ	900KΩ	4KΩ	*	5 MEG.	50Ω
3	1H5GT	INF.	*	1.5 MEG.	10 MEG.	1 MEG.	580KΩ	*	1 MEG.	10 MEG.
4	3Q5GT	0Ω	*	4KΩ	4KΩ	2.2 MEG.	INF.	*	*	--

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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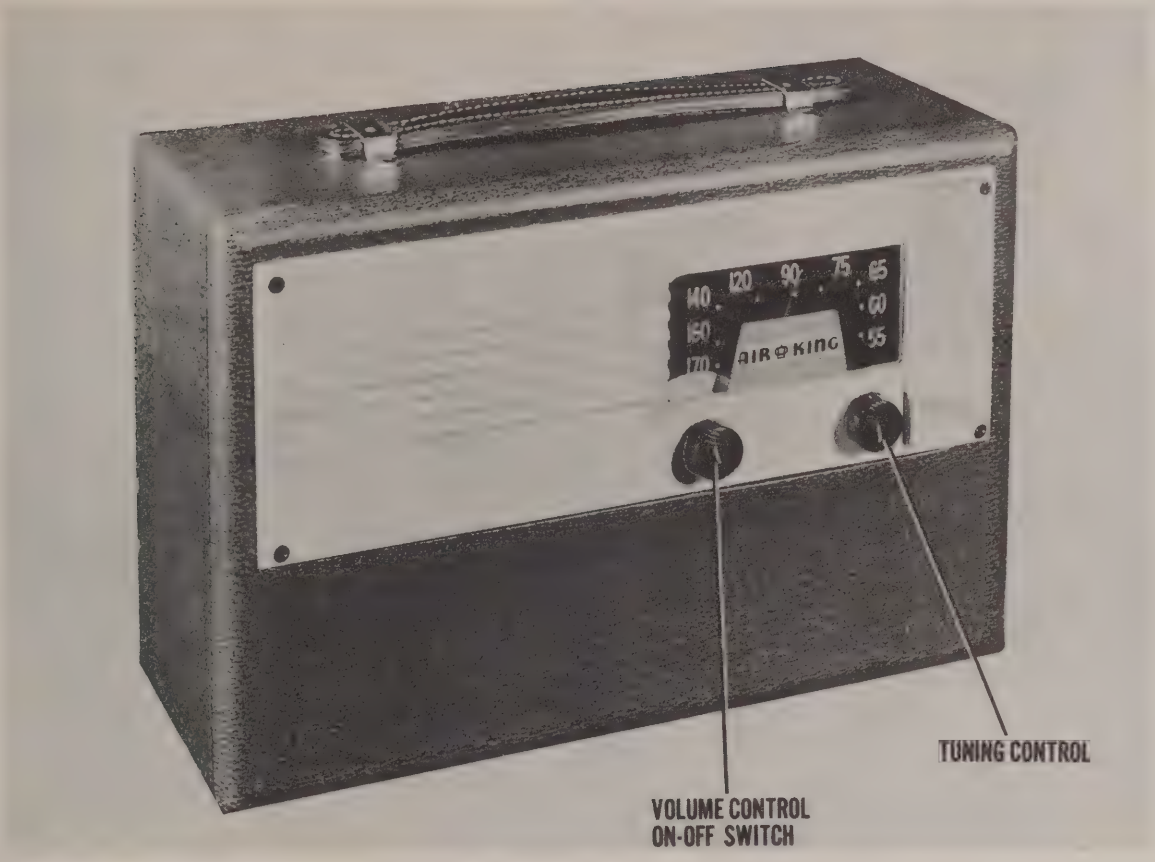
4714-2

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to low side of volume control during stage gain measurements.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIR KING MODEL A-510
BATTERY OPERATED



AIR KING MODEL A-510
BATTERY OPERATED

AIR KING MODEL A-510

TRADE NAME	Air King, Model A-510
MANUFACTURER	Air King Products Co., Inc., 1523 63rd St., Brooklyn, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 7½ Volt "A" Supply & 90 Volt "B" Supply
RATING	.160 Amp. @ 117 Volts AC or 51 MA @ 7.5 Volts DC & 15 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Loop should be maintained in same relative position to ch ssis as when receiver is in cabinet. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning capacitor. Low side to chassis.	456KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation.
2		Loop	1500KC	Second mark from left end of dial backplate.	"	A5	Adjust for maximum output.
3		"	"	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

AIR KING MODEL A-510
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3Q4	3Q4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	60	150		UP6BJ34		DY-804020-150	EL-26		■ Filter
B	60	150							▲ "
C	25	50		BR255			TA-525		Fil. Bypass
6	25	25		BR252A	TC26	M-25-25	TA-25	PRS25-25	Fil. Bypass
7	.05	200		DT4S5	TP426	MPW-4-05	TC-15	484-05	Line Filter
8	.005	400		DT6D5	TP408	S-6-005	TC-25	484-005	Output Plate Bypass
9	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	Fil. Bypass
10	.001	400		DT6D1	TP404	S-6-001	TC-21	484-001	Audio Coupling
11	.2	200		DT4P2	TP429	S-4-2	TC-2	484-.2	AF Plate Decoup.
12	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	AF Screen Bypass
13	.005	400		DT6D5	TP408	S-6-005	TC-25	484-005	Audio Coupling
14	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	AVC Filter
15	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	Fil. Bypass
16	.001	400		DT6D1	TP404	S-6-001	TC-21	484-001	Ext. Ant. Isolation
17	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Osc. Anode Decoup.
18	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AF Plate Bypass
19	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
20	11	500		5R5Q1	MCE215	MOS.5-41	MS-41	1469-00001	Fixed Trimmer*

*Not used in all models.

CONTROLS

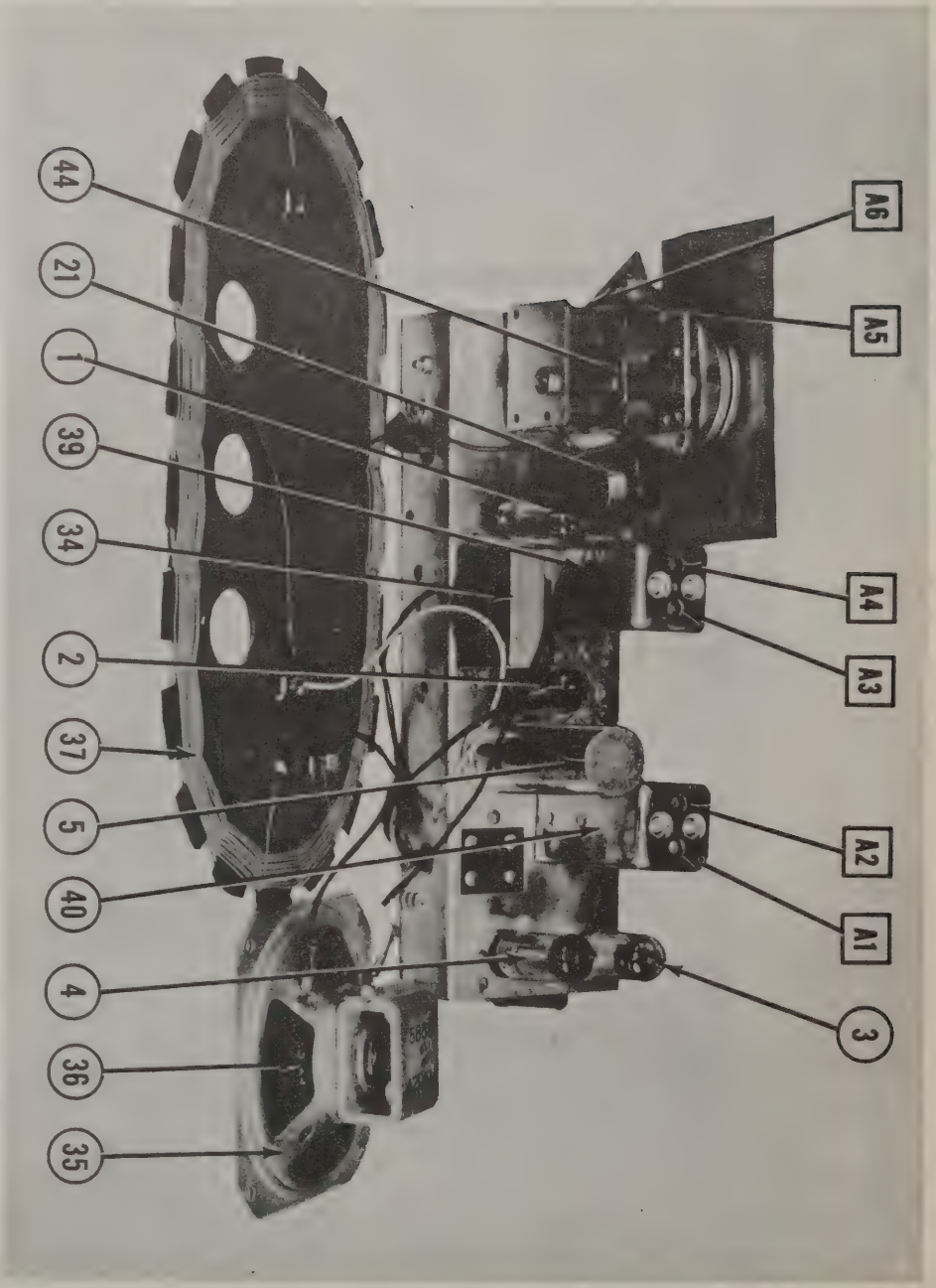
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
21A	1 Meg.	1	2481	MR53	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 21A per instructions
C	Switch		" "	M-27	42	SW-2A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
22	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
23	8200Ω	½		BTS-8200	Gray-Red-Red Voltage Dropping
24	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
25	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
26	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
27	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
28	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Decoupling
29	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Output Grid
30	270Ω	½		BW-½-270	Red-Vi.-Br. Filament String
31	820Ω	½		BTS-820	Gray-Red-Br. Filament String
32A	660Ω	10	2177A	ABA-750	Filter - See Note
B	1500Ω			AB-1500	Filament String
33	33Ω	1		BW-1-33	Or.-Or.-Blk. Rectifier Ballast

Note-On IRC replacement set slider at 660Ω from one end.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIR KING PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
34	8300Ω	3.3Ω	310Ω	.5Ω	1337	A-3878	T22847	A-2932	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIR KING PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-113		
35	PM	3.3Ω	5868	Mod. P4-X		
	CONE DIA.	VC DIA.				
36	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

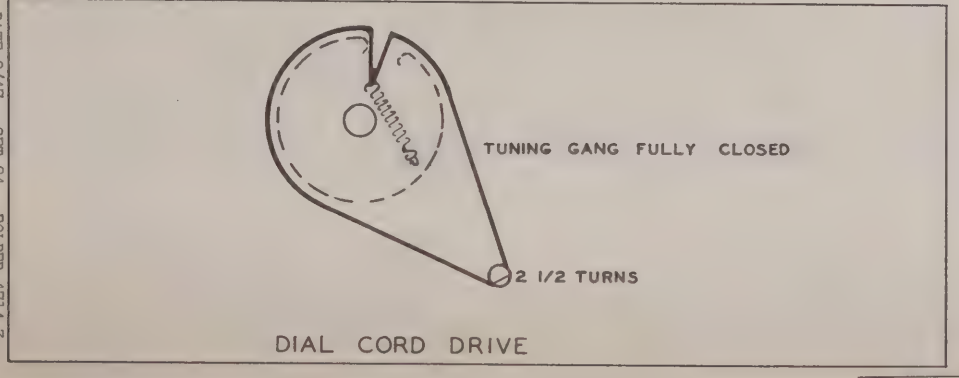
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIR KING PART No.	MEISSNER PART No.	
37	Loop Ant.	.1Ω	1.5Ω	28190		
38	Osc. Coil	1.5Ω	6Ω	28197	14-1040	
39	Input IF	21Ω	21Ω	3371	16-6658	
40	Output IF	30Ω	31Ω	3535	16-6660	

BATTERIES

ITEM No.	VOLTAGE	AIR KING PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
41	7.5V "A" 90V "B"				#753	

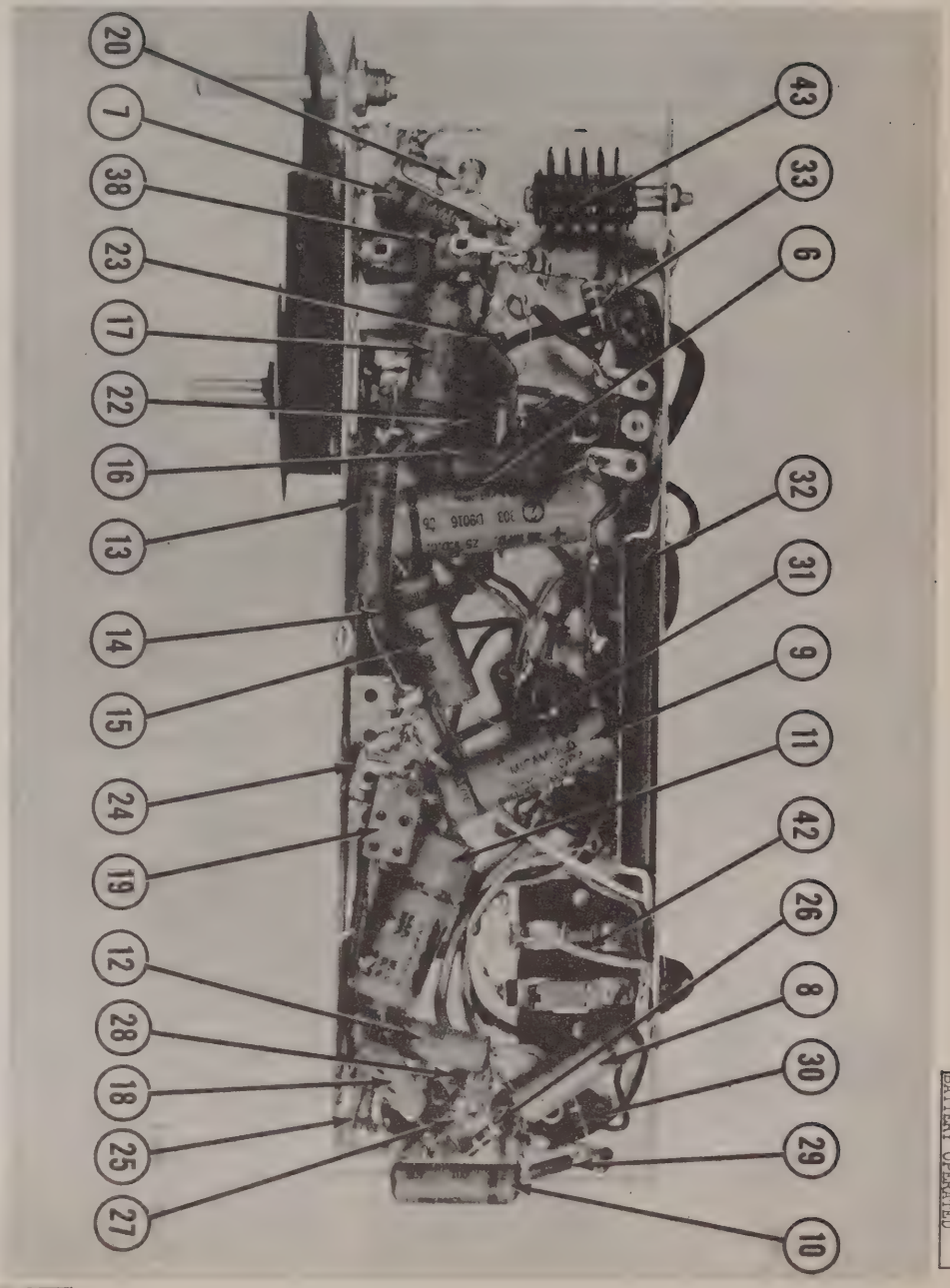
MISCELLANEOUS

ITEM No.	PART NAME	AIR KING PART No.	NOTES
42	Switch	18132	Power Change-Over
43	Rectifier		Selenium
44	2 Gang Var. Cap	1694	23-460 MMF, 17-188 MMF



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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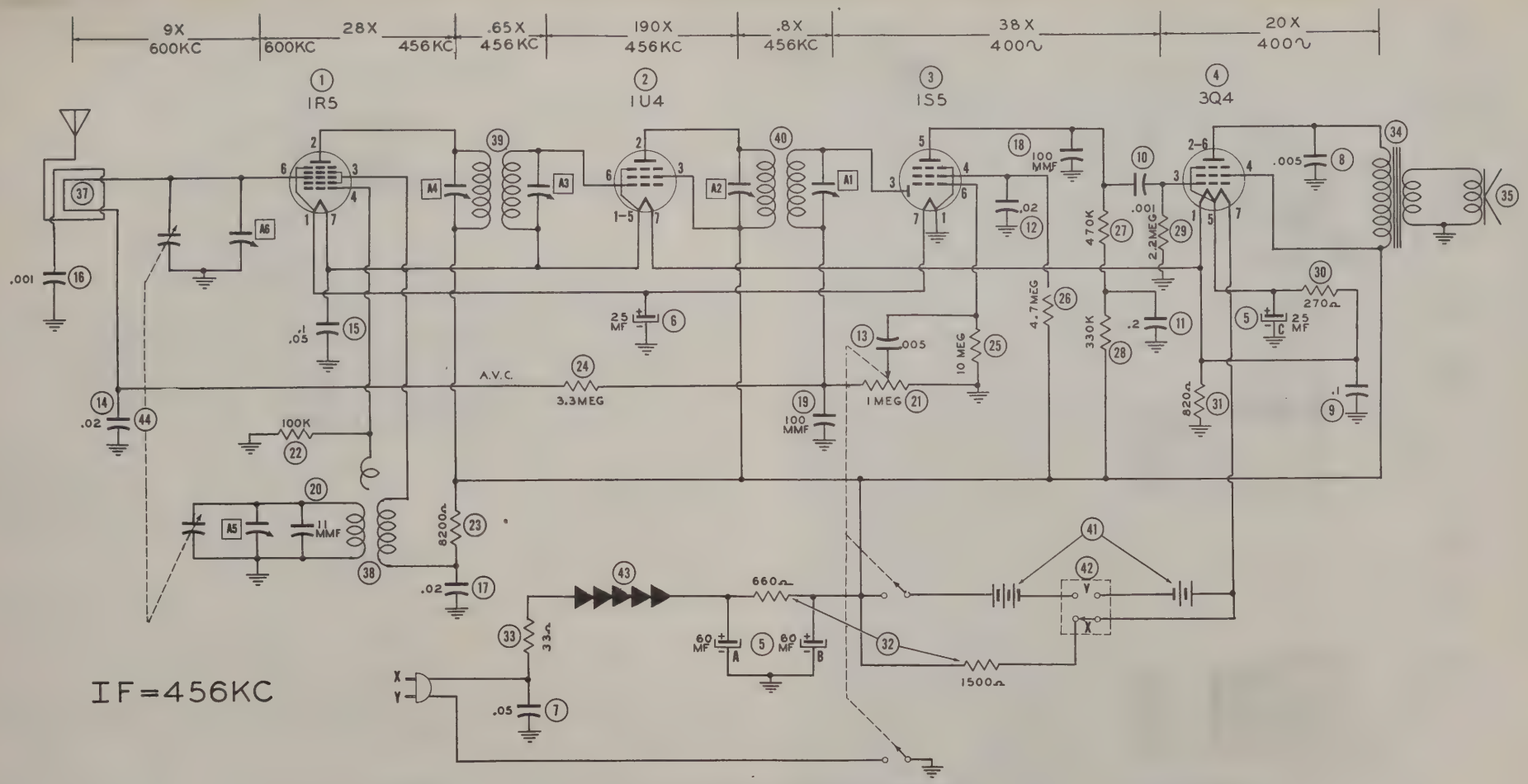
AIR KING MODEL A-51C BATTERY OPERATED

AIR KING MODEL A-51C BATTERY OPERATED



VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	1.7VDC	80VDC	57VDC	-4VDC§	1.7VDC	0V.	3.2VDC
2	1U4	3.2VDC	80VDC	80VDC	80VDC	3.2VDC	3.2VDC	4.6VDC
3	1S5	0V.	53VDC	-.2VDC	24VDC	22VDC	0V.	1.7VDC
4	3Q4	4.6VDC	77VDC	0V.	80VDC	5.8VDC	77VDC	7.2VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	1400Ω	9600Ω	105KΩ	*	4.5 MEG.	*
2	1U4	*	1400Ω	1400Ω	1400Ω	*	50Ω	*
3	1S5	0Ω	330KΩ	860KΩ	4.7 MEG.	800KΩ	10 MEG.	*
4	3Q4	*	2KΩ	2 MEG.	1400Ω	*	2KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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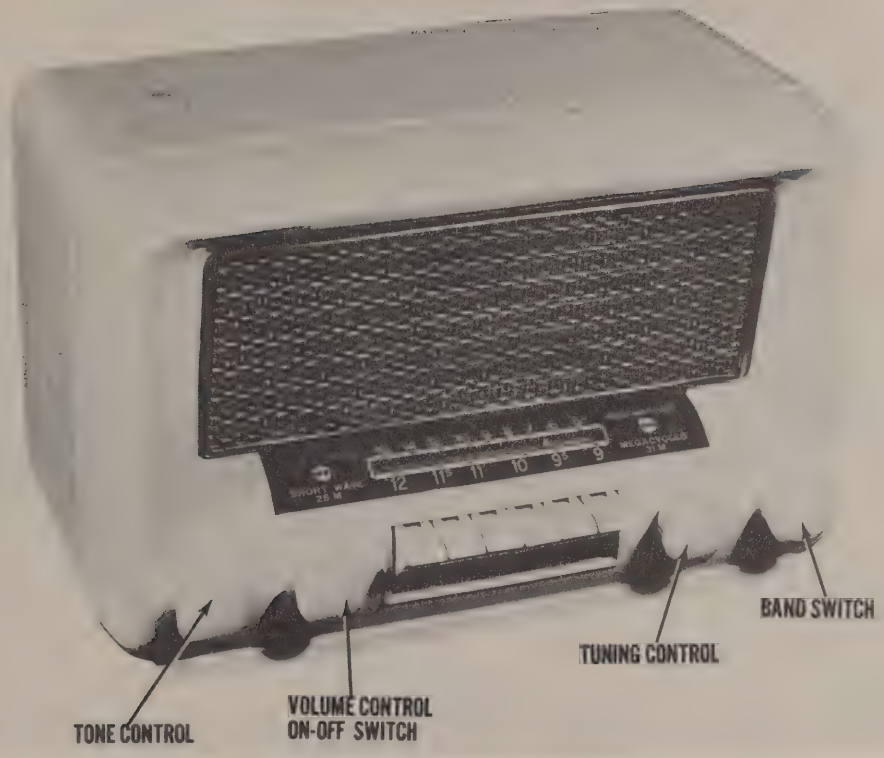
4714-3

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to chassis during stage gain measurements.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRLINE MODELS 64BR-1513A,B;
64BR-1514A,B; 74BR-1513B; 74BR-1514B



AIRLINE MODEL 74BR-1514B

TRADE NAME	Airline, Models 64BR-1513A, B; 64BR-1514A, B; 74BR-1513B, 74BR-1514B.
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC-DC 2 Band Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 12SG7 RF Amp., 12SA7 Converter, 12SF7 IF Amp.-Det.-AVC, 12SJ7 AF Amp., 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC — RATING .240 Amps. @ 117V AC
TUNING RANGE—BROADCAST	530-1600KC — SHORT WAVE 9-12MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer at starting marker on right end of dial backplate. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 2 (grid) 12SF7. Low side to B-.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2,	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	High side to Pin 8 (grid) 12SA7. Low side to B-.	"	"	"	"	A3,A4.	Adjust for maximum output
3	.1 MFD.	High side to ext. ant. clip. Low side to chassis.	1400KC	"	1400KC	"	A5	" " " "
4	.1 MFD.	"	"	"	Tune for maximum output.	"	A6	" " " "
5	.1 MFD.	"	12MC	SW	12MC	"	A7	" " " "
6	.1 MFD.	"	"	"	Tune for maximum output.	"	A8	Rock tuning cap. and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

AIRLINE MODELS 64BR-1013A,B; 64BR-1014A,B; 74BR-1013B, 74BR-1014B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SG7	12SG7	8BK	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.-Det-AVC	12SF7	12SF7	7AZ	
4	AF Amp.	12SJ7	12SJ7	8N	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	A-8C-10077	UP6CJ44	FP357	DY-403020-150	EL-224	AF844D	■ Filter
B	20	150							▲ "
C	20	150							"
8	.1	400	C-8D-10760	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Filter
9	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	Output Plate Bypass
10	.02	400	C-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
11	.004	600	C-8D-10783	DT6D4	TP407	S-6-004	TC-24	684-004	Tone Compensation
12	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
13	.05	200	C-8D-10770	DT4S5	TP426	S-4-05	TC-15	484-05	Audio Screen Bypass
14	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	Hum Balance
15	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
16	.05	200	C-8D-10770	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
17	.1	200	C-8D-10771	DT4P1	TP428	S-4-1	TC-1	484-.1	RF Bypass Pwr. Supp.
18	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	RF Cath. Bypass
19	.1	400	C-8D-10760	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
20	.02	200	C-8D-11304	DT4S2	TP423	S-4-02	TC-12	484-02	" "
21	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	Ext. Ant. Cpupling
22	220	500	C-8F3-10	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Audio Plate Bypass
23	220	500	C-8F3-10	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Diode Filter
24	100	500	C-8F3-8	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
25	47	500	C-8F3-109	5W5Q5	MC225	MO.5-447	1FM-45	1468-00005	Osc. Grid Capacitor
26	220	500	C-8F3-10	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	RF Coupling
27	500	500	C-8F3-1091	5R5T5	MCB245	MOS.5-35	MS-35	1469-0005	" "
28	220	500	C-8F3-10	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	" "
29	150	500	C-8F3-115	5W5T15	MC236	MO.5-315	1FM-315	1468-00015	Loop Pri. Shunt

CONTROLS

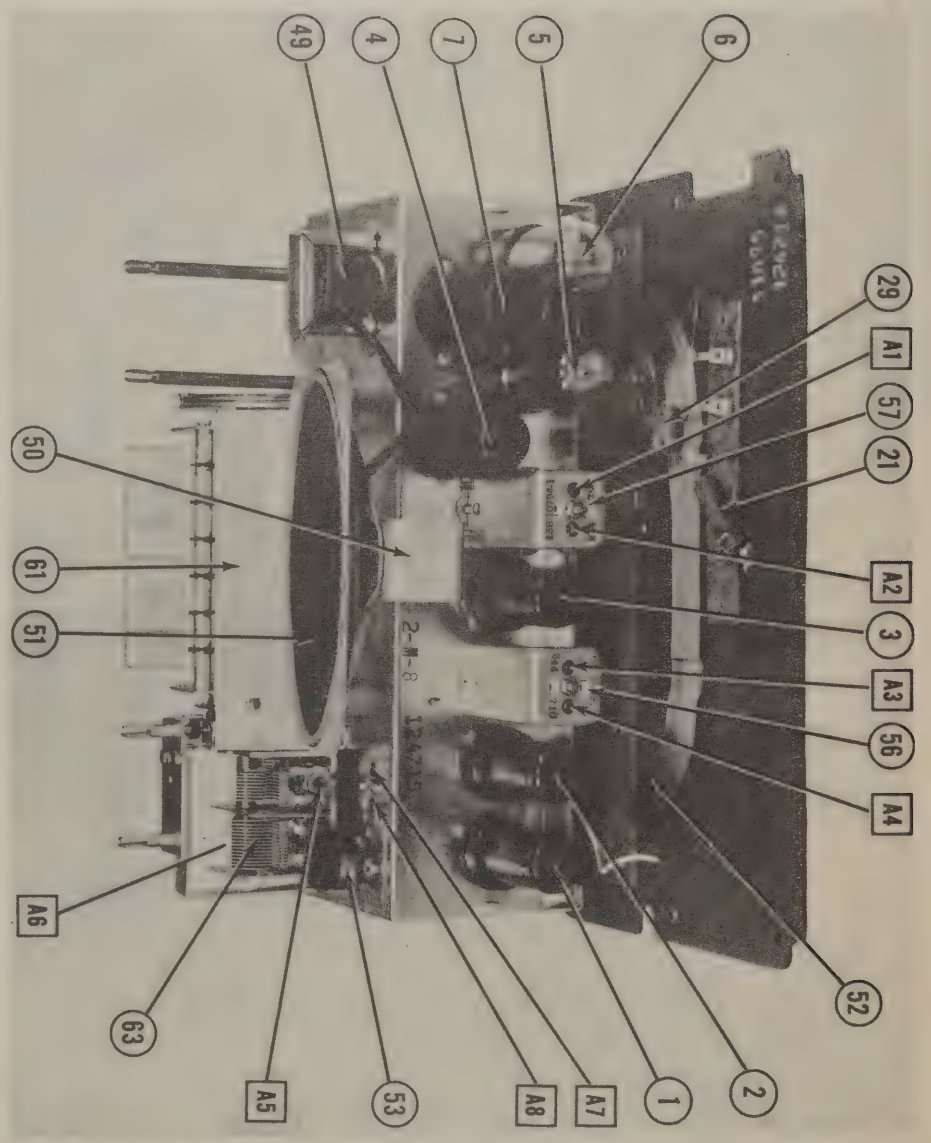
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
30A	1 Meg.	1	A-10A-10688	TM236	D19-137X		Volume Control
B	Shaft		Not Req.	SS25	A & C3*		Attach to 30A per instructions
C	Switch		" "	M26T	47		" " " " "
31A	500KΩ	1	A-11B-10690	UM154	D13-133		Tone Control
B	Shaft		Not Req.	SS25	A & C3*		Attach to 31A per instructions

*Use C3 coupling and part of original shaft.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
32	220KΩ	½	C-9B1-27	BTS-220K	Red-Red-Yl. Line Isolation
33	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. RF Grid - See Note
34	4700Ω	½	C-9B1-70	BTS-4700	Yl.-Vi.-Red RF Plate Load
35	100KΩ	½	C-9B1-25	BTS-100K	Br.-Blk.-Yl. Converter Grid
36	22KΩ	½	C-9B1-78	BTS-22K	Red-Red-Or. Oscillator Grid
37	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
38	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
39	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or. Tone Compensation
40	100KΩ	½	C-9B1-86	BTS-100K	Br.-Blk.-Yl. AF Plate Load
41	560KΩ	½	C-9B1-95	BTS-560K	Grn.-Blue-Yl. AF Screen Dropping
42	10 Meg.	½	C-9B1-37	BTS-10 Meg.	Br.-Blk.-Blue AF Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
43	470KΩ	½	C-9B1-94	BTS-470K	Yl.-Vi.-Yl. Output Grid
44	150Ω	½	C-9B1-52	BW-½-150	Br.-Grn.-Br. Output Cathode
45	1200Ω	1	C-9B2-63	BTA-1200	Br.-Red-Red Filter
46	180Ω	1	C-9B2-53	BW-1-180	Br.-Gray-Br. Filter
47	22Ω	½	C-9B1-42	BW-½-22	Red-Red-Blk. Rectifier Ballast
48	33Ω	1	C-9B2-44	BW-1-33	Or.-Or.-Blk. Line Dropping

Note-Some models use 1.5 Meg. in this application. IRC replacement BTS-1.5 Meg.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
49	3000Ω	2.6Ω	275Ω	.5Ω	B-12C-10826	A-3876	T22S45	A2930	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
50	FIELD	VC IMP.	B-18A-10260			
	PM	2.6Ω				
51	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			
	4"x6"	1/2"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
52A	Loop Ant.	21Ω	1.3Ω	C-212-11095		For 62-1513
B	" "			C-212-11095-1		For 62-1514
53	SW Ant. Coil	0Ω	0Ω	B-13E-10834		
54	BC Osc. Coil	1Ω	4.5Ω	A-13D-10838		
55	SW Osc. Coil	0Ω	0Ω	B-13D-10833		
56	Input IF	34Ω	34Ω	B-13B-10091-2	16-6658	
57	Output IF	25Ω	23Ω	B-13B-10794-1	16-6660	
58	RF Choke		2Ω	A-16A-10837		
59	" "		8Ω	A-16A-10835		
60	" "		0Ω	A-16A-10836		

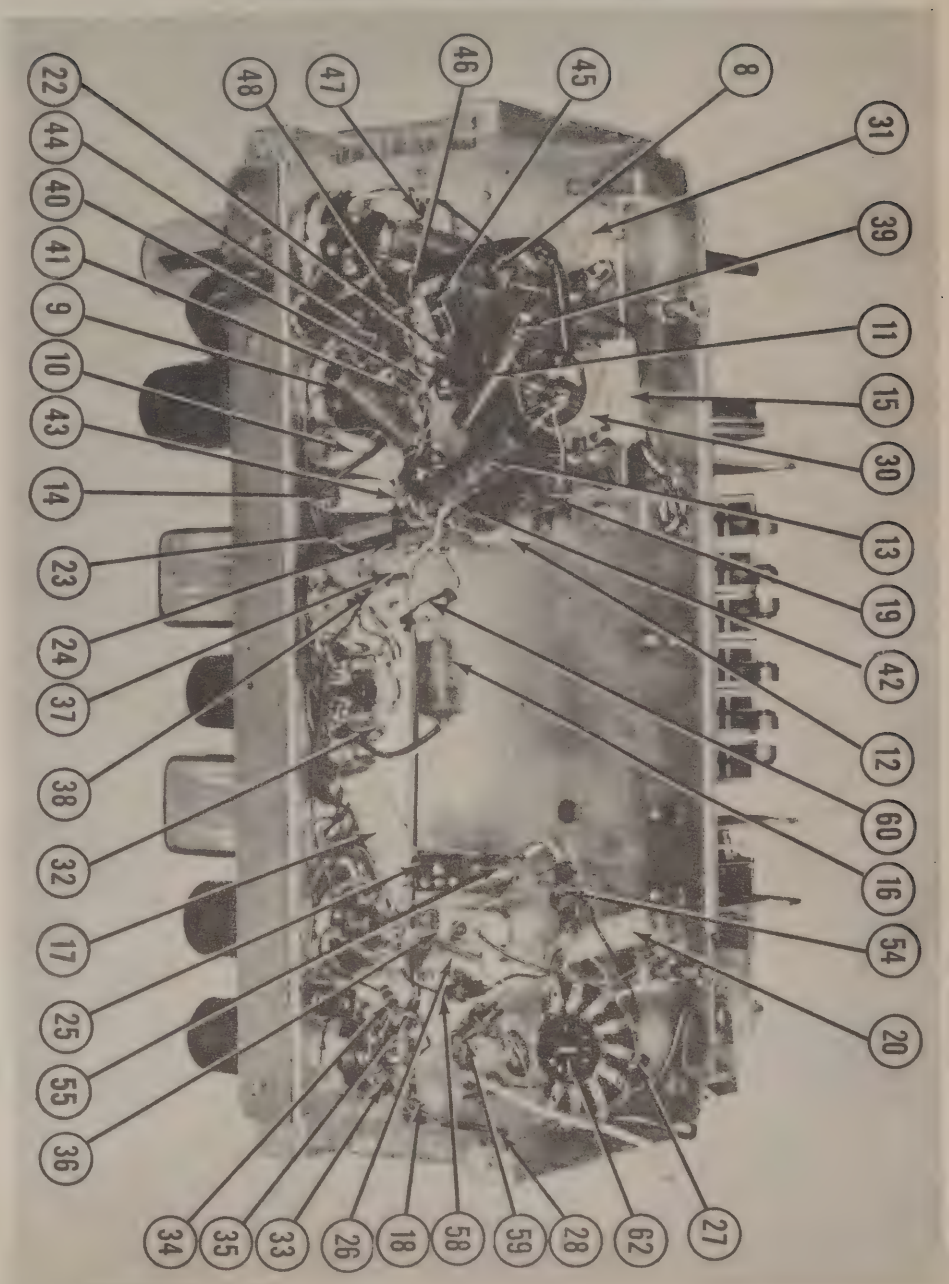
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRLINE PART No.		
61	Bayonet	6-8	0.15	Brown	A-46A-10793		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
62	Band Switch	B-20A-10259	
63	Tuning Cap.	B-8A-10827	(30-507 MMF, 28-202 MMF)
A7	Dual Trimmer	A-8H-10839	SW Osc. Adj.
A8			SW Ant. Adj.
	Dial Scale	B-6D-10704-1	For 62-1513
	" "	B-6D-10704	" 62-1514
	Pointer	A-2G-10685	
	Cabinet	5C-10002-46	Walnut Bakelite
	"	5C-10002-9	Ivory Bakelite

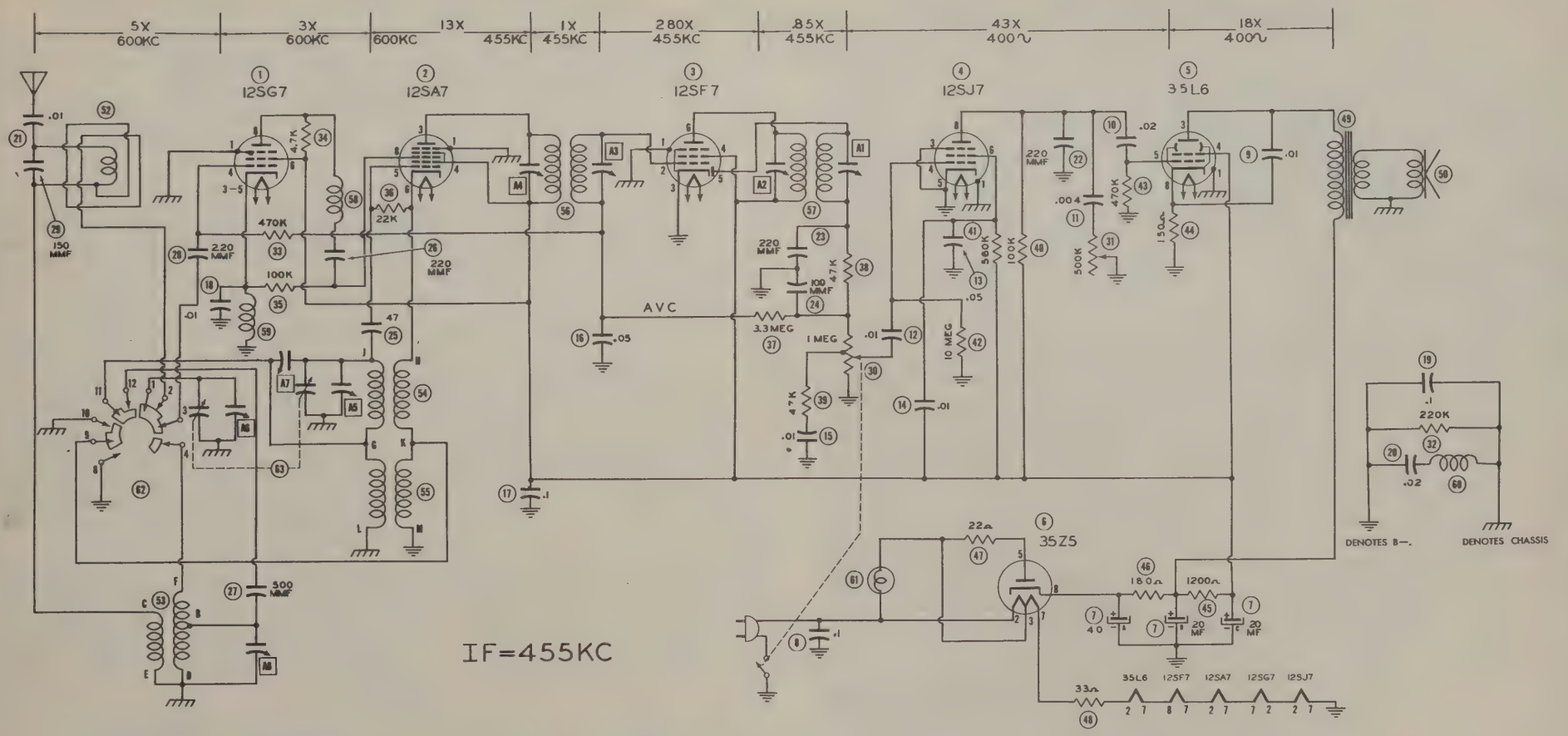
CHASSIS—BOTTOM VIEW



AIRLINE MODELS 64BR-1513A,B; 64BR-1514A,B; 74BR-1513B, 74BR-1514B

AIRLINE MODELS 64BR-1513A,B; 64BR-1514A,B; 74BR-1513B, 74BR-1514B

DATE 9/47 SET 24 FOLDER #4714-4



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SG7	0V.	12VAC	0V.	-.5VDC	0V.	74VDC	25VAC	58VDC
2	12SA7	0V.	37VAC	74VDC	74VDC	-5VDC$	0V.	28VAC	0V.
3	12SF7	0V.	-.7VDC	0V.	74VDC	-.7VDC	74VDC	37VAC	30VAC
4	12SJ7	0V.	12VAC	0V.	-.6VDC	0V.	18VDC	0V.	37VDC
5	35L6GT	0V.	82VAC	98VDC	74VDC	0V.	0V.	30VAC	4VDC
6	35Z5GT	0V.	117VAC	112VAC	0V.	110VAC	0V.	87VAC	115VDC

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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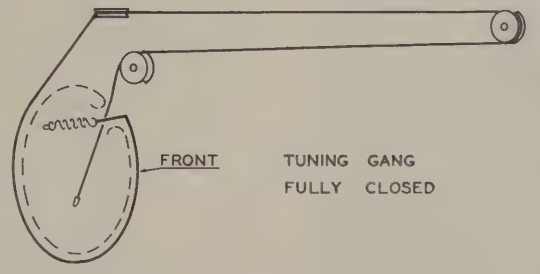


RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SG7	220KΩ	12Ω	8Ω	5 Meg.	8Ω	90KΩ	24Ω	65KΩ
2	12SA7	220KΩ	34Ω	90KΩ	90KΩ	22KΩ	1.5Ω	24Ω	100KΩ
3	12SF7	220KΩ	4 Meg.	0Ω	90KΩ	1.1 Meg.	90KΩ	34Ω	46Ω
4	12SJ7	220KΩ	12Ω	0Ω	10 Meg.	0Ω	650KΩ	0Ω	190KΩ
5	35L6GT	220KΩ	78Ω	90KΩ	90KΩ	460KΩ	INF.	46Ω	140Ω
6	35Z5GT	INF.	135Ω	130Ω	INF.	150Ω	INF.	110Ω	90Ω

$TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4-714-4

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

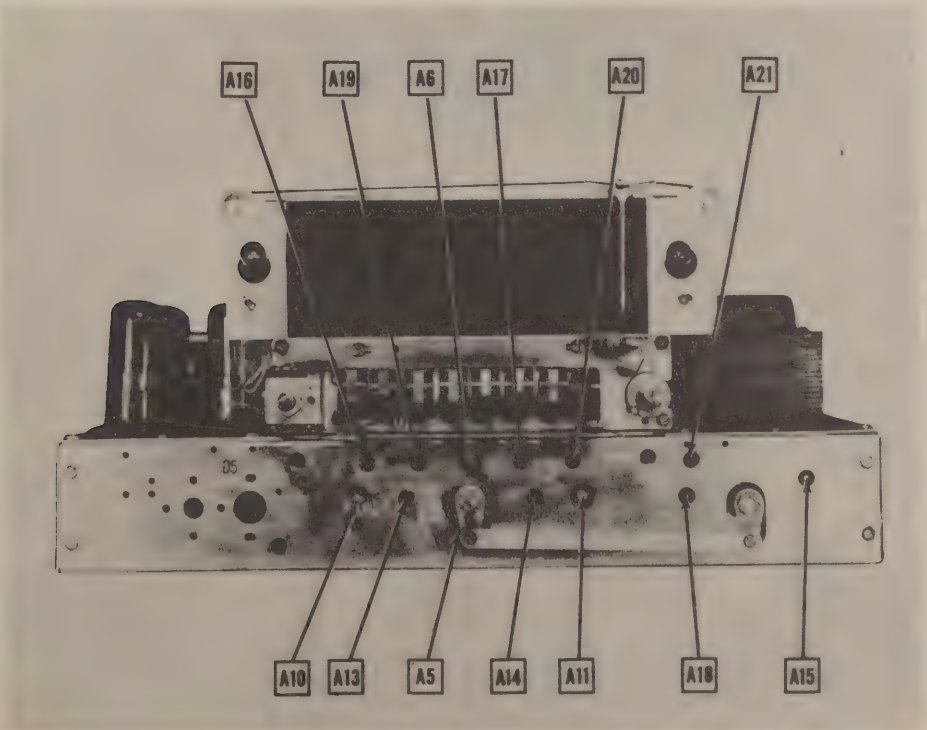
AIRLINE MODEL 74BR-2701A

TRADE NAME	Airline, Model 74BR-2701A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio 5 Band Superheterodyne Receiver.
TUBES (EIGHT)	Types, 6SK7GT RF Amp., 6SA7 Converter, 6SK7GT IF Amp., 6SQ7GT/G Det.-AVC-AF, 6J5GT Phase Inverter, (2) 6K6GT/G Power Output, 5Y3GT/G Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.740 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC
SHORT WAVE	5.96-6.19MC, 9.1-10MC, 11.45-12.16MC, 14.94-15.46MC.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer rotate manual tuning control until core bar is 1/32" from 2 rod guide angles. Set pointer per sketch at 1600KC reference mark on back of dial backplate. Rotate cores of three BC coils until end of core is 1-5/32" from end of coil form. Rotate the three 9MC coil cores until this dimension is 1-1/6" from end of coil form. (As per sketch). Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 6SA7. Low side to chassis.	455KC	BC	1600KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	200MMFD	High side to ext. ant. lead. Low side to ext. gnd. lead.	1600KC	"	1600KC reference mark on back of dial backplate.	"	A5,A6, A7	" " " "
3	200MMFD	"	1400KC	"	Tune for maximum output.	"	A8,A9	Adjust slugs for maximum output. Recheck A5, A6, A7,at 1600KC.
4	400Ω	"	9.6MC	31 meter	9.6MC reference mark on back of dial backplate.	"	A10,A11 A12.	Adjust for maximum output.
5	400Ω	"	6.1MC	49 meter	6.1 reference mark on back of dial backplate.	"	A13,A14 A15	" " " "
6	400Ω	"	11.8MC	25 meter	11.8 reference mark on back of dial backplate.	"	A16,A17 A18	" " " "
7	400Ω	"	15.2MC	19 meter	15.2 ref. mark on back of dial backplate.	"	A19,A20 A21	" " " "



AIRLINE MODEL
74BR-2701A

AIRLINE MODEL
74BR-2701A

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Inverter	6J5GT	6J5GT	6Q	
6	Power Output	6K6GT	6K6GT	7S	
7	Power Output	6K6GT	6K6GT	7S	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	15	450	BE-119019	UP6CJ47	FP390	DY-3x15-450	EL-344	AF44J	■ Filter
B	15	450							▲ "
C	10	350						PRS350/10	" "
10	.02	600	BEC-8J-11321	DT6S2	TP412	MPW-6-02	TC-12	684-02	Line Bypass
11	.02	600	BEC-8J-11321	DT6S2	TP412	MPW-6-02	TC-12	684-02	" "
12	.004	600	BEC-8D-10788	DT6D4	TP407	S-6-004	TC-24	684-004	Tone Compensation
13	.05	400	BEC-8D-10813	DT4S5	TP426	S-4-05	TC-15	484-05	Audio Coupling
14	.05	200	BEC-8D-10770	DT4S5	TP426	S-4-05	TC-15	484-05	" "
15	.02	400	BEC-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-02	" "
16	.006	600	BEC-8D-10785	DT6D6	TP409	S-6-006	TC-26	684-006	" "
17	.03	200	BEC-8D-10992	DT4S3	TP424	S-6-03	TC-13	484-03	Tone Compensation
18	.1	200	BEC-8D-10771	DT4P1	TP428	S-4-1	TC-1	484-.1	IF Cathode Bypass
19	.02	400	BEC-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-02	AVC Filter
20	.1	400	BEC-8D-10760	DT4P1	TP428	S-4-1	TC-1	484-.1	RF Bypass Pwr. Supply
21	.1	200	BEC-8D-10771	DT4P1	TP428	S-4-1	TC-1	484-.1	RF Cathode Bypass
22	.005	600	BEC-8D-10935	DT6D5	TP408	S-6-005	TC-25	684-005	Tone Compensation
23	.1	400	BEC-8D-10760	DT4P1	TP428	S-4-1	TC-1	484-.1	RF Bypass Pwr. Supply
24	220	500	BEC-8F3-10	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	AF Plate Bypass
25A	50	500	BE-129165B	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Diode Filter
B	50	500		5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	" "
26	200	500	BEB-8F-10763	5R5T2	MCE237	MOS.5-32	MS-32	1469-0002	Fixed Trimmer
27	47	500	BEB-8F3-109	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Cap.
28	470	500	BEB-8F3-121	5W5T5	MC245	MO.5-35	1FM-35	1468-0005	RF Coupling
29	10	500	BEB-8F5-101	5R5Q1	MCE215	MOS.5-41	MS-41	1469-00001	" "
30	470	500	BEB-8F3-121	5W5T5	MC245	MO.5-35	1FM-35	1468-0005	" "
31	2000	500	BEB-8F-10767	1W5D2	MC457	MW.5-22	1FM-22	1467-002	Antenna Coupling
32	470	500	BEC-8F3-12	5W5T5	MC245	MO.5-35	1FM-35	1468-0005	" "

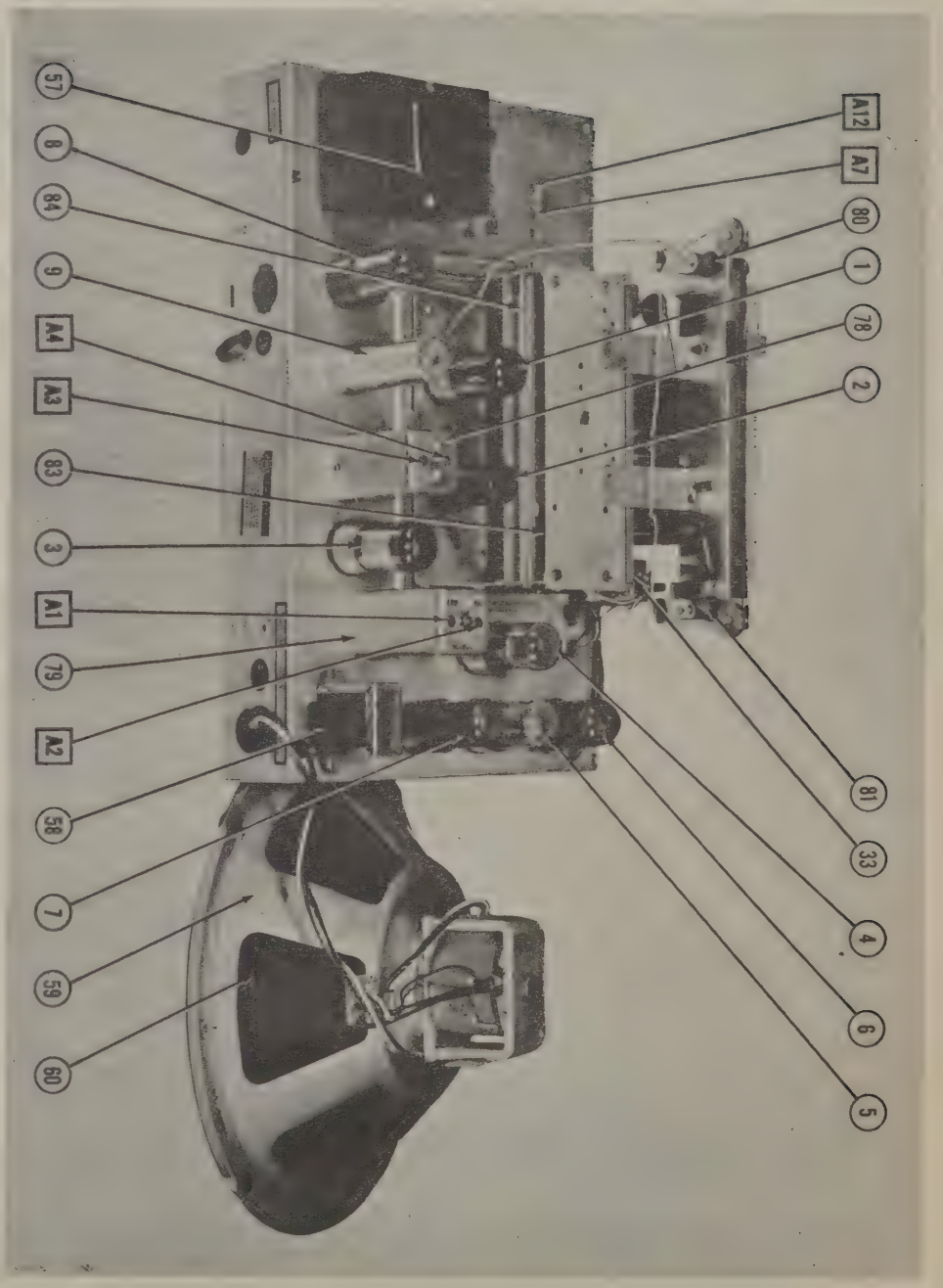
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
33A	500KΩ	1	BEA-10A-10-	TM233	D18-133X	AT-88	Volume Control
B	Shaft		832	SS25	E	KSS-3	Attach to 33A per instructions
C	Switch		Not Req.	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
34	22KΩ	½	BEC-9B1-21	BTS-22K	Red-Red-Or. Loop Loading
35	22KΩ	½	BEC-9B1-21	BTS-22K	Red-Red-Or. External Antenna Loading
36	1 Meg.	½	BEC-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
37	270Ω	½	BEC-9B1-55	BW-½-270	Red-Vi.-Br. RF Cathode
38	4700Ω	½	BEC-9B1-70	BTS-4700	Yl.-Vi.-Red RF Plate Load BC
39	1 Meg.	½	BEC-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
40	27KΩ	½	BEC-9B1-79	BTS-27K	Red-Vi.-Or. Oscillator Grid
41	47Ω	½	BEC-9B1-46	BW-½-47	Yl.-Vi.-Blk. Parasitic Suppressor
42	560Ω	½	BEC-9B1-59	BTS-560	Grn.-Blue-Br. IF Cathode
43	12500Ω	3	BE-10662	AB-12500	Screen Dropping
44	47KΩ	½	BEC-9B1-23	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
45	3.3 Meg.	½	BEC-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
46	15KΩ	½	BEC-9B1-20	BTS-15K	Br.-Grn.-Or. Tone Compensation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
47	4.7 Meg.	½	BEC-9B1-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
48	33KΩ	½	BEC-9B1-22	BTS-33K	Or.-Or.-Or. Tone Compensation
49	220KΩ	½	BEC-9B1-27	BTS-220K	Red-Red-Yl. AF Plate Load
50	100KΩ	½	BEC-9B1-86	BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
51	1 Meg.	½	BEC-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. Phase Inverter Grid
52	4700Ω	½	BEC-9B1-70	BTS-4700	Yl.-Vi.-Red Phase Inverter Cathode
53	100KΩ	½	BEC-9B1-86	BTS-100K	Br.-Blk.-Yl. Phase Inverter Cathode
54	470KΩ	½	BEC-9B1-29	BTS-470K	Yl.-Vi.-Yl. Output Grid
55	470KΩ	½	BEC-9B1-29	BTS-470K	Yl.-Vi.-Yl. Output Grid
56	330Ω	1	BEC-9B2-56	BW-1-330	Or.-Or.-Br. Output Cathode

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRLINE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
57A	117V AC @ .74A	600V CT @ .098A	4.9V AC @ 2.0A	6.3V AC @ 2.5A	BE104202B	P-6312*	T22R04	P-2925*	*Drill new mounting holes.
B					104203B				For 25 Cycles
C					104205B				For 40 Cycles

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
58	1100Ω CT	3.2Ω	670Ω CT	.4Ω	BEB-12C-10234	A-3650	T22S43	A-2938	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.				
59	540Ω	3.2Ω	B-18B-10616			
	CONE DIA.	VC DIA.				
60	11-3/4"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

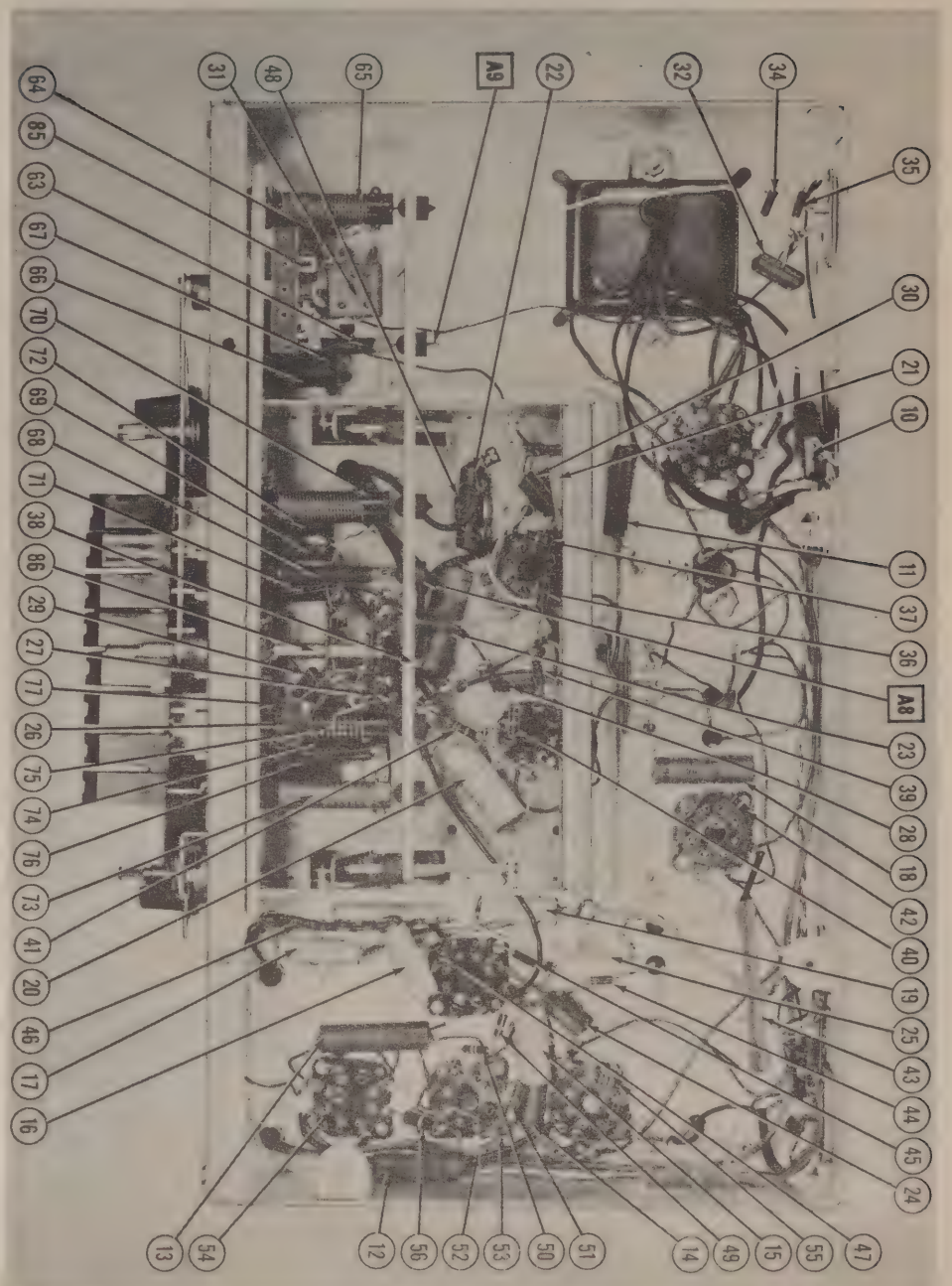
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
61	Loop Ant.		.1Ω	BE-14A-11066		300Ω line wound on back of cabinet.
62	Ant. Choke		0Ω	BEA-16A-11045		
63	BC Ant. Coil		6.5Ω	BE-111195		
64	6MC " "		.1Ω	BE-111189		
65	9MC " "	.1Ω	0Ω	BE-111190		
66	12MC " "		0Ω	BE-111191		
67	15MC " "		0Ω	BE-111192		
68	BC RF Coil		6Ω	BE-10962		
69	6MC " "		.1Ω	BE-10958		
70	9MC " "	1Ω	0Ω	BE-10959		
71	12MC " "		0Ω	BE-10960		
72	15MC " "		0Ω	BE-10961		
73	BC Osc.Coil	.5Ω	6.5Ω	BE-110161		
74	6MC " "		.1Ω	BE-110156		
75	9MC " "		0Ω	BE-110157		
76	12MC " "		0Ω	BE-110158		
77	15MC " "		0Ω	BE-110159		
78	Input IF	20Ω	20Ω	BE-108177		
79	Output IF	10Ω	9.5Ω	BE-108176		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRLINE PART No.		
80	Bayonet	6-8	0.25	Blue	BE-10794		Type 44
81	"	"	"	"	"		" "

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	AIRLINE PART No.	ASTATIC PART No.	
82		L-7C-S	

MISCELLANEOUS

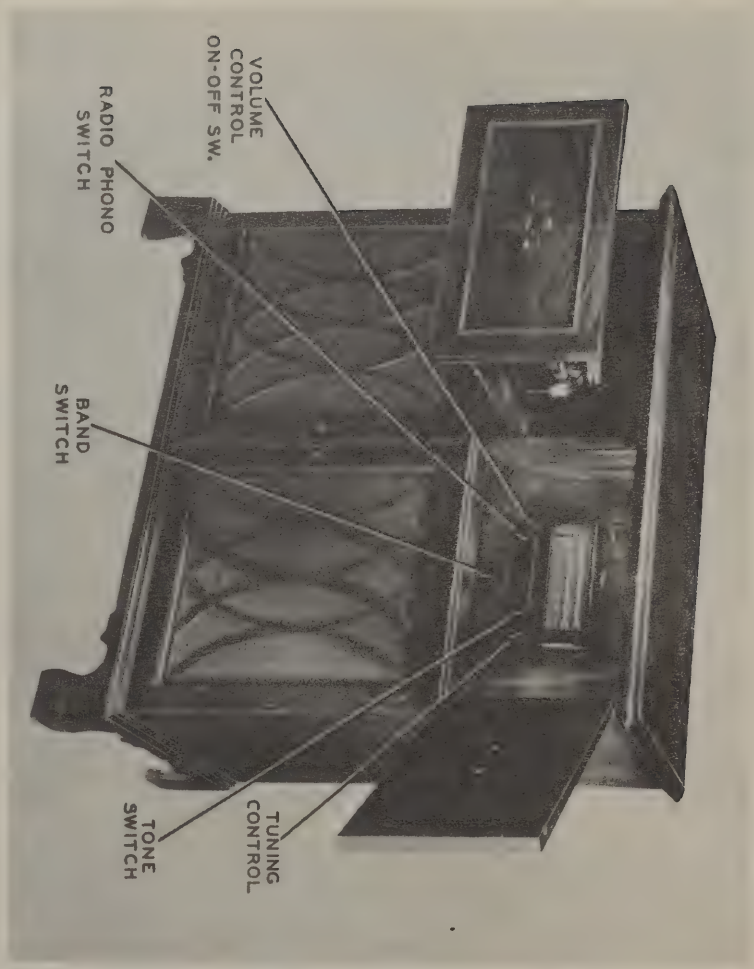
ITEM No.	PART NAME	AIRLINE PART No.	NOTES
83	Switch	BE-125129	Radio-Phono
84	"	BEA-20F-7322-2	Tone, 3 Position
85	Band Switch	BEB-20A-10526	Antenna Section
	or	BEB-20A-11053	
86	Band Switch	BEB-20A-10527	Osc. & RF Section
	or	BEB-20A-11054	
A5	Trimmer Cap.	BE-124144	BC Osc. Adj. (15-27 MMF)
A6	" "	BEA-8G-7205	BC RF Adj. (120-220 MMF)
A7	Trimmer Cap.	BE-124143	BC Ant. Adj. (67-123 MMF)
A12			9MC Ant. Adj. (95-175 MMF)
A10	Trimmer Cap.	BE-124145	9MC Osc. Adj. (7-35 MMF)
A11	" "	BEA-8G-7206	9MC RF Adj. (60-110 MMF)
	Dial Scale	BEC-6D-10897	
	Dial Pointer	BEB-2G-10511	
	Knob	BE-128683-37	Band Switch
	"	BEB-5B-10377-37	Tuning
	"	BEB-5B-10376-37	Volume

PUSHBUTTON ADJUSTMENTS

1. Turn on receiver and allow it to warm up for about 15 minutes.
2. Pull out the six station selector buttons until they release with a snap.
3. Tune in desired station with manual tuning control. Hold the manual tuning control and push desired pushbuttons in all the way.
4. To set up the remaining pushbuttons follow the same procedure as outlined above.

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs.
2. Remove speaker plug from chassis.
3. Remove phono-motor plug from chassis.
4. Remove phono-pickup plug from chassis.
5. Remove loop antenna plug from chassis.
6. Remove four bolts holding chassis in cabinet. Remove chassis from cabinet.
7. Remove four wood screws holding speaker in cabinet. Remove speaker from cabinet.



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION. RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	0V.	-.1VDC	3VDC	118VDC	6.3VAC	250VDC
2	6SA7	0V.	6.3VAC	290VDC	118VDC	-3VDC§	0V.	0V.	-.2VDC
3	6SK7GT	0V.	0V.	0V.	-.5VDC	5VDC	118VDC	6.3VAC	290VDC
4	6SQ7GT	0V.	-.65VDC	0V.	-.5VDC	-.4VDC	87VDC	0V.	6.3VAC
5	6J5GT	0V.	6.3VAC	200VDC	290VDC	40VDC	92VDC	0V.	100VDC
6	6K6GT	0V.	0V.	285VDC	290VDC	0V.	0V.	6.3VAC	23VDC
7	6K6GT	0V.	6.3VAC	285VDC	290VDC	0V.	0V.	0V.	23VDC
8	5Y3GT	0V.	350VDC	60VAC	300VAC	60VAC	300VAC	57VAC	350VDC

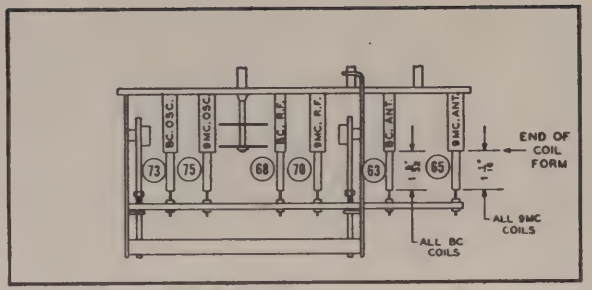
§TAKEN WITH VACUUM TUBE VOLTMETER.

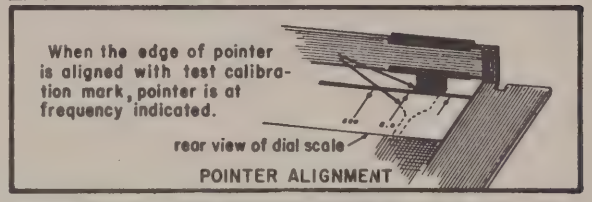
RESISTANCE READINGS

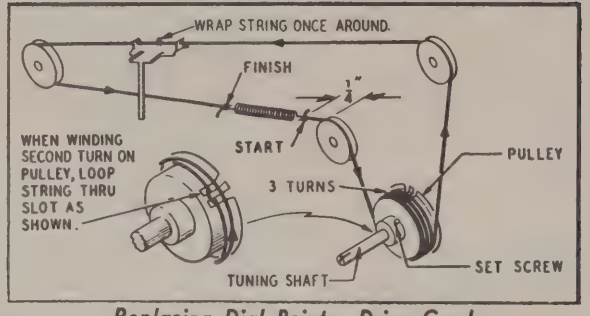
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	0Ω	0Ω	5 Meg.	250Ω	93KΩ	.1Ω	85KΩ
2	6SA7	0Ω	.1Ω	80KΩ	93KΩ	27KΩ	.5Ω	0Ω	5 Meg.
3	6SK7GT	0Ω	0Ω	0Ω	4 Meg.	520Ω	93KΩ	.1Ω	80KΩ
4	6SQ7GT	0Ω	5 Meg.	0Ω	4 Meg.	580KΩ	300KΩ	0Ω	.1Ω
5	6J5GT	0Ω	.1Ω	180KΩ	[illegible]0KΩ	1.1 Meg.	110KΩ	0Ω	115KΩ
6	6K6GT	0Ω	0Ω	80KΩ	80KΩ	430KΩ	INF.	.1Ω	350Ω
7	6K6GT	0Ω	.1Ω	80KΩ	80KΩ	420KΩ	INF.	0Ω	350Ω
8	5Y3GT	0Ω	80KΩ	INF.	115Ω	INF.	105Ω	INF.	80KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



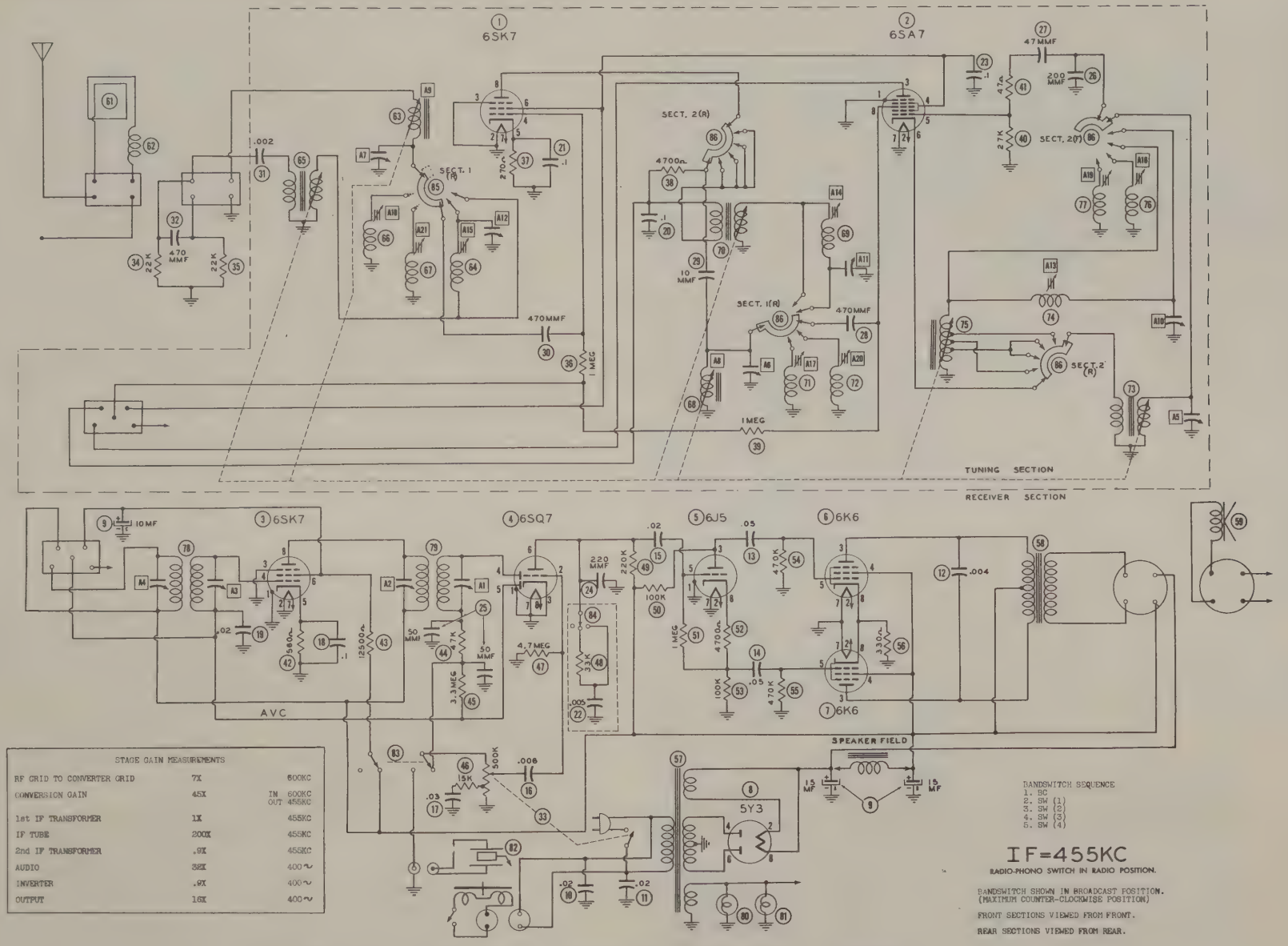

When the edge of pointer is aligned with test calibration mark, pointer is at frequency indicated.
rear view of dial scale
POINTER ALIGNMENT



Replacing Dial Pointer Drive Cord

After stringing, spring must be 1/4" from idler when tuning shaft is in extreme counterclockwise position. To do this: Loosen set screw; hold tuning shaft firm and turn pulley by hand until spring is 1/4" from idler; tighten screw.

DATE 9/47 SET 24 FOLDER #4714-5



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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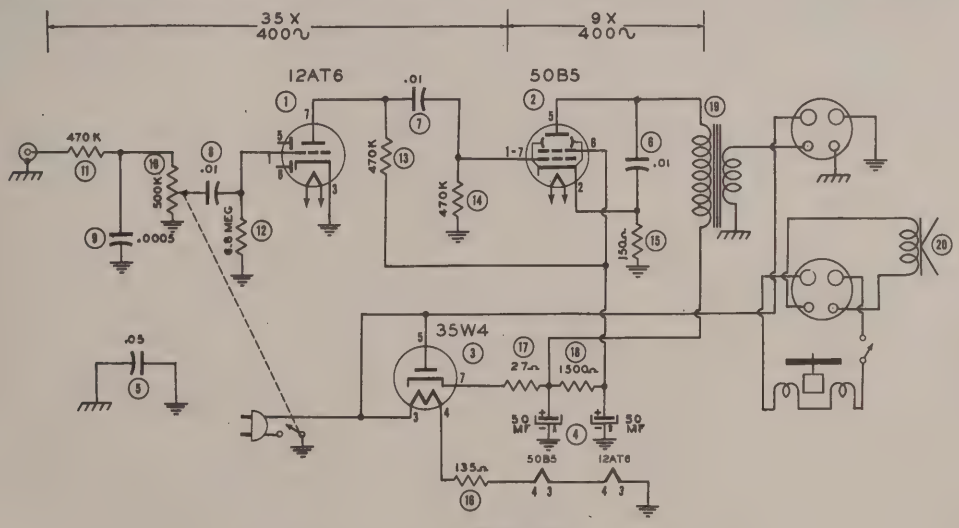
4714-5

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

AIRLINE MODEL 74WG-925A

TRADE NAME	Airline, Model 74WG-925A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated Phonograph with 3 Tube Amplifier & Speaker
TUBES (THREE)	Types, 12AT6 Audio Amp., 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .250 Amp. @ 117 Volts AC



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12AT6	-.7VDC	0V.	0V.	12VAC	-.5VDC	-.5VDC	50VDC
2	50B5	0V.	8.1VDC	12VAC	62VAC	120VDC	122VDC	0V.
3	35W4	0V.	0V.	117VAC	83VAC	117VAC	90VAC	130VDC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12AT6	7 Meg.	0Ω	0Ω	12Ω	INF.	INF.	700KΩ
2	50B5	460KΩ	150Ω	12Ω	60Ω	200KΩ	200KΩ	460KΩ
3	35W4	INF.	INF.	230Ω	200Ω	230Ω	205Ω	200KΩ

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4714-6

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 9/47 SET 24 FOLDER #4714-6

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	12AT6	12AT6	7BT	
2	Power Output	50B5	50B5	7BZ	
3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	50	150	45X341	EZ5515	2N521	DSB-2x50-150	TA-505	PRSA150-50-	Filter - Red
B	50	150						50	" - Blue
5	.05	400	D66503	DT4S5	TP426	MPH-4-05	TC-15	484-05	Line Filter
6	.01	200	B66103	DT4S1	TP421	S-4-01	TC-11	484-01	Output Plate Bypass
7	.01	200	B66103	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
8	.01	200	B66103	DT4S1	TP421	S-4-01	TC-11	484-01	" "
9	.0005	200	B66501	DT6T5	TP403	S-6-0005	TC-35	1468-0005	Tone Compensation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
10A	500KΩ	½	36X367	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 10A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
11	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. Series Phono
12	6.8 Meg.	½	B85685	BTS-6.8 Meg.	Blue-Grey-Grn. AF Grid
13	470KΩ	½	B84474	BTS-470K	Yl.-Vi.-Yl. AF Plate
14	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. Output Grid
15	150Ω	½	B84151	BW-½-150	Br.-Grn.-Br. Output Cathode
16	1352	5	43X218	ABA-150	Line Dropping-See Note
17	27Ω	1	C84270	BW-1-27	Red-Vi.-Blk. Surge Limiter
18	1500Ω	1	C85152	BTA-1500	Br.-Grn.-Red Filter

Note-On IRC replacement set slider 1352 from one end.

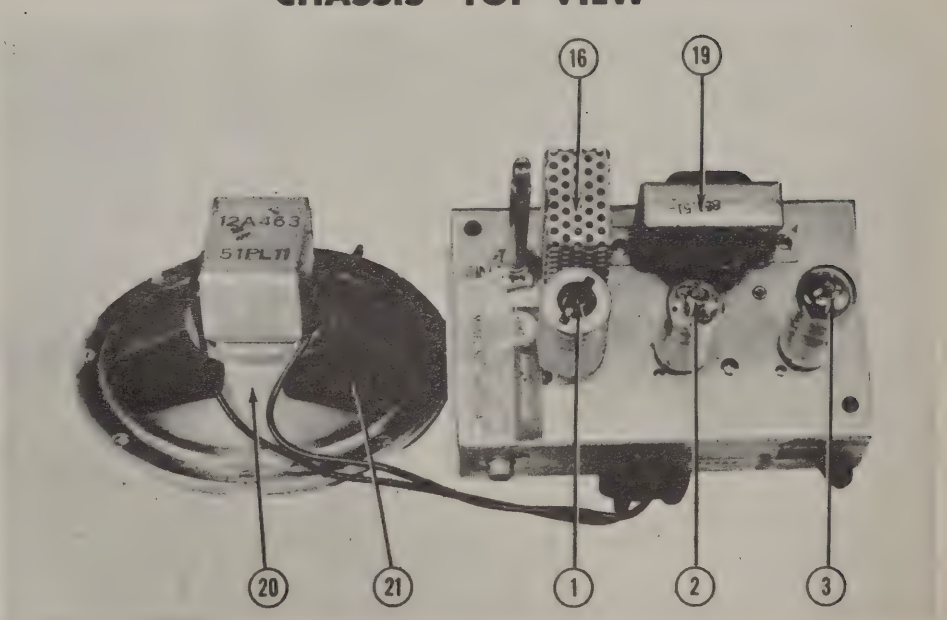
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
19	2900Ω	3.6Ω	200Ω	.62Ω	51X123	A-3876	T22845	A-2928	

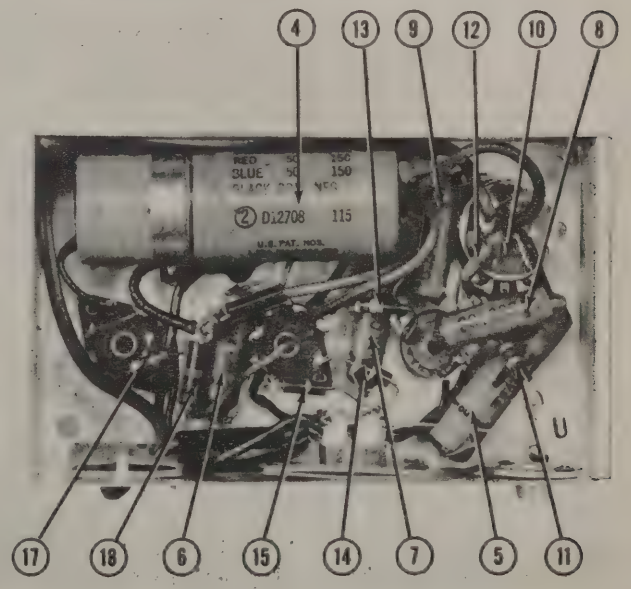
SPEAKER

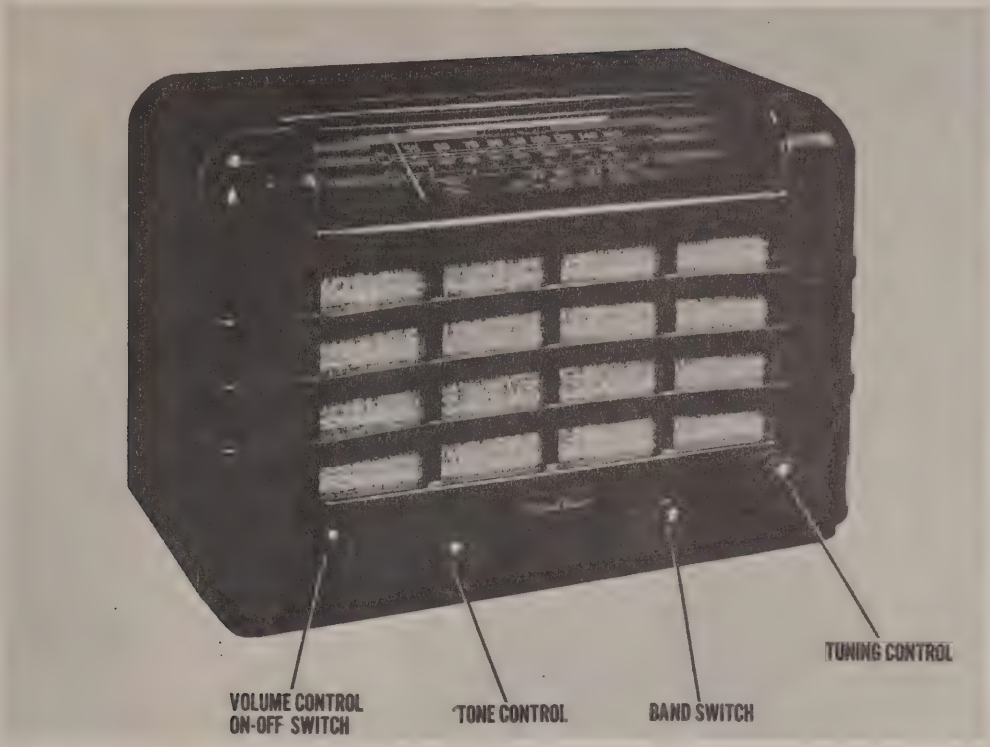
ITEM No.	RATINGS		REPLACEMENT DATA: AIRLINE PART No.	JENSEN PART No.		INSTALLATION NOTES
20	FIELD PM	VC IMP. 3.6Ω	12A463	ST-105 P5-X		
21	CONE DIA. 4"	VC DIA. ¾"	ORDER FROM MANUFACTURER-SPECIFY PART NUMBER AND LETTERS STAMPED ON SPEAKER			

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW





ANDREA MODEL T-UI5

TRADE NAME	Andrea, Model T-UI5
MANUFACTURER	Andrea Radio Corp., 27-01 Bridge Plaza North, Long Island City (1), N.Y.
TYPE SET	AC-DC Operated 2 Band Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-130 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC
RATING SHORT WAVE	250 Amp. @ 117 Volts AC 5.8-22MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Remove self-tapping screw located below tuning drum. Mount a short length of stiff wire under this screw and extend it up to the reference scale to be used as a pointer. Turn tuning capacitor fully closed and set pointer at the 100 mark. This scale can now be used to calibrate the receiver. Remove this wire before installing in cabinet. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin #8 (grid) of 12SA7. Low side to B-.	455KC	BC (counter clockwise)	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	400Ω carbon res.	High side to ant. terminal. Low side to chassis.	20.0MC	SW (clockwise)	10 on reference scale. (See pre-alignment instructions)	"	A5	Adjust for maximum output. Set signal generator to 20.9MC. The image should be heard. If it is not, reset signal generator to 20MC a and open A5 to next peak. Recheck for image.
3	"	"	"	"	Tune for maximum output.	"	A6	Rock tuning capacitor and adjust for maximum output.
4	250MMF.	"	1500KC	BC	12.5 on ref. scale	"	A7, A8	Adjust for maximum output in order given.
5	250MMF.	"	600KC	"	Tune for maximum output. (Approx. 83.5 on ref. scale)	"	A9	Rock tuning capacitor and adjust for maximum output. Repeat Steps 3, 4 & 5 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

ANDREA MODEL T-U15

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ANDREA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	HC-198	UP6CJ44†	FP311	DY-604020-150	EL-352	AF1010D	▲ Filter
B	60	150							■ "
C	20	25		BR202A				PRS25-25	Cathode Bypass
7	.1	400	HC-4	DT4P1	TP428	MPW-4-1	TC-1	484-.1	Line Filter
8	.025	600	HC-192	DT6S25	TP451	S-6-03	TC-13	684-025	Output Plate Bypass
9	.003	600	HC-20	DT6D3	TP406	S-6-003	TC-23	684-003	Tone Comp.
10	.05	200	HC-6	DT4S5	TP426	S-4-05	TC-15	484-05	Audio Coupling
11	.003	600	HC-20	DT6D3	TP406	S-6-003	TC-23	684-003	" "
12	.01	400	HC-9	DT4S1	TP421	S-4-01	TC-11	484-01	Ext. AF Coupling
13	.05	200	HC-6	DT4S5	TP426	S-4-05	TC-15	484-05	Ext. AF Isolation
14	.05	200	HC-6	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
15	.01	400	HC-9	DT4S1	TP421	S-4-01	TC-11	484-01	IF Cathode Bypass
16	.25	200	HC-10	DT4P25	TP430	S-4-25	TC-2	484-.25	RF Bypass Pwr. Supp.
17	.01	400	HC-9	DT4S1	TP421	S-4-01	TC-11	484-01	Ext. Ant. Coupling
18	170	500	HC-35	5A5T15	MC236	MO.5-315	1FM-315	1468-00015	Diode Filter
19	100	500	HC-33	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Cap.
20	3500	300	HC-105						Fixed Padder

†Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	1 Meg.	½	GRV-804				Volume Control
B	Shaft		Not Req.				" "
C	Switch						
22A	500KΩ		GRV-805	UM-156	D11-133	AM-58S	Tone Control
B	Shaft	½	Not Req.	SS25	E	KSS-3	Attach to 22A per instructions

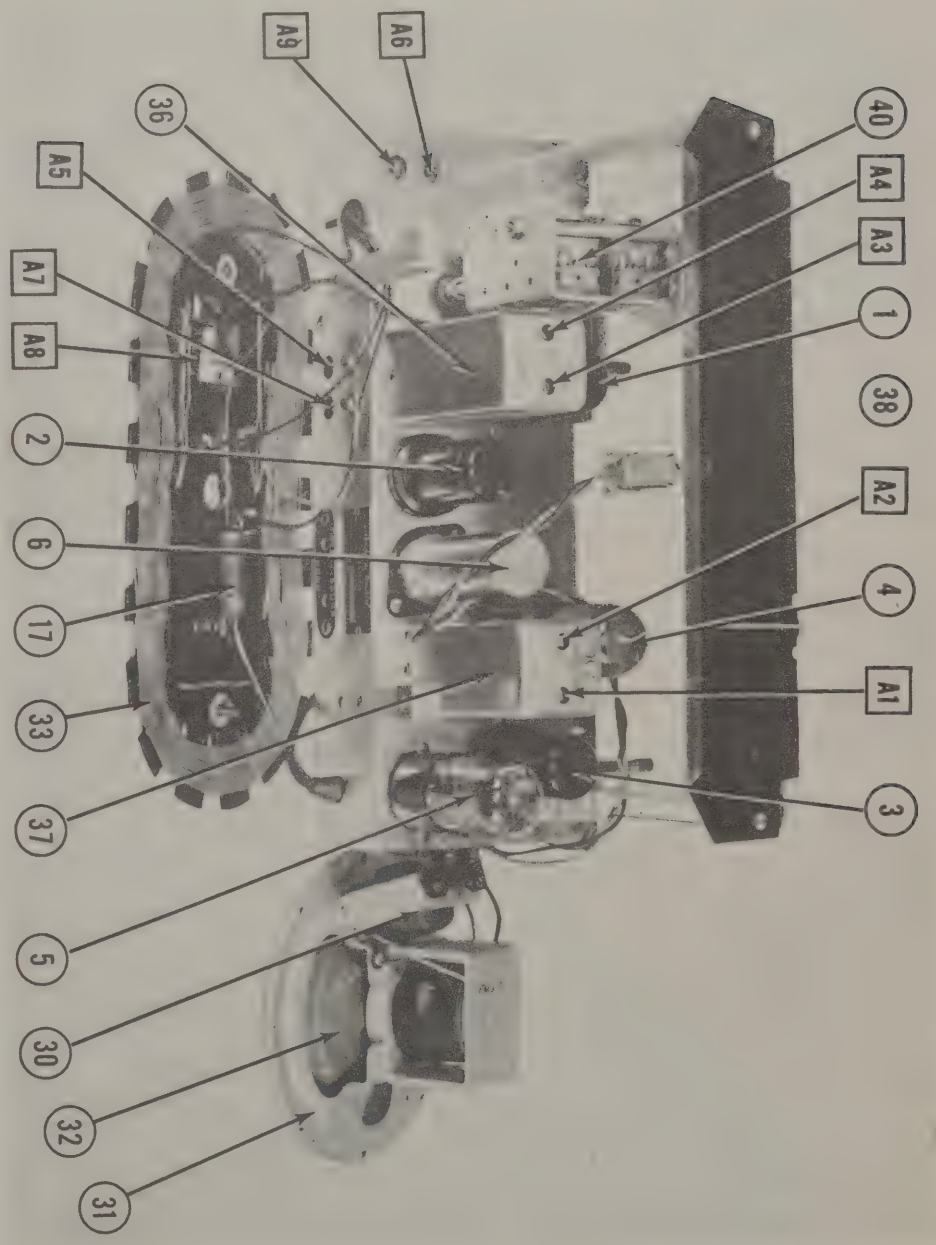
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	IRC PART No.	IDENTIFICATION CODES
23	20KΩ	¼	GR-28	BTS-20K	Red-Blk.-Or. Osc. Grid
24	150Ω	½	GR-112	BW-½-150	Br.-Grn.-Br. IF Cathode
25	2 Meg.	¼	GR-23	BTS-2 Meg.	Red-Blk.-Grn. AVC Network
26	100KΩ	¼	GR-7	BTS-100K	Brn.-Blk.-Yl. Diode RF Filter
27	5 Meg.	¼	GR-111	BTS-5 Meg.	Grn.-Blk.-Grn. AF Grid
28	240K	¼	GR-46	BTS-240K	Red-Yl.-Yl. AF Plate Load
29	150Ω	½	GR-112	BW-½-150	Br.-Grn.-Br. Output Cathode

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ANDREA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
30	1600Ω	3.3Ω	156Ω	.5Ω	Part of FM-918	A-3878	T22S45	A-3928	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ANDREA PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-194		
31	400Ω	3.3Ω	FM-915	Mod. FS-X		Field choke Part No. FM-915
	CONE DIA.	VC DIA.				
32	4-5/8"	1/2"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

R F COILS

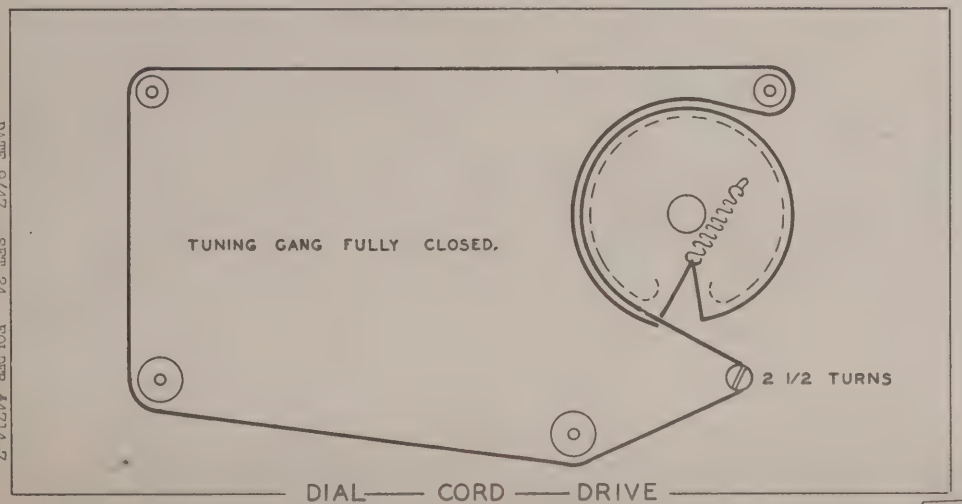
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ANDREA PART No.	MEISSNER PART No.	
33	Loop Ant.	0Ω	1Ω	SA-278		
34	SW Ant.Coil	.7Ω	0Ω	SA-257	14-1044	
35A	BC Osc.Coil	1Ω	4.5Ω	SA-274		35A & 35B wound on same form.
B	SW " "	0Ω	0Ω			
36	Input IF	17Ω	17Ω	SA-204A		
37	Output IF	22Ω	22Ω	SA-205D		

DIAL LIGHT

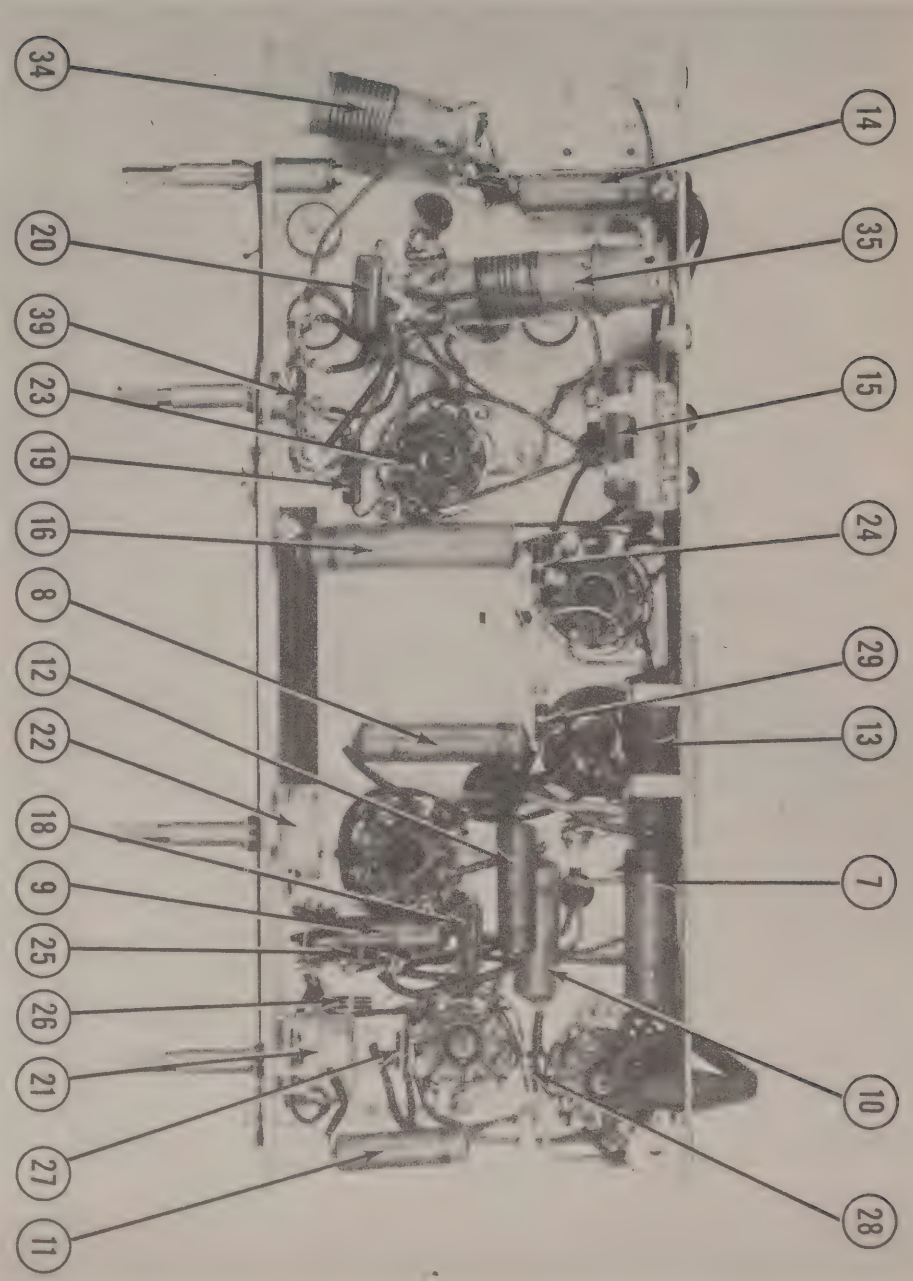
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ANDREA PART No.		INSTALLATION NOTES
38	Bayonet	6-8	0.15	Brown	FM-696		Type 47

MISCELLANEOUS

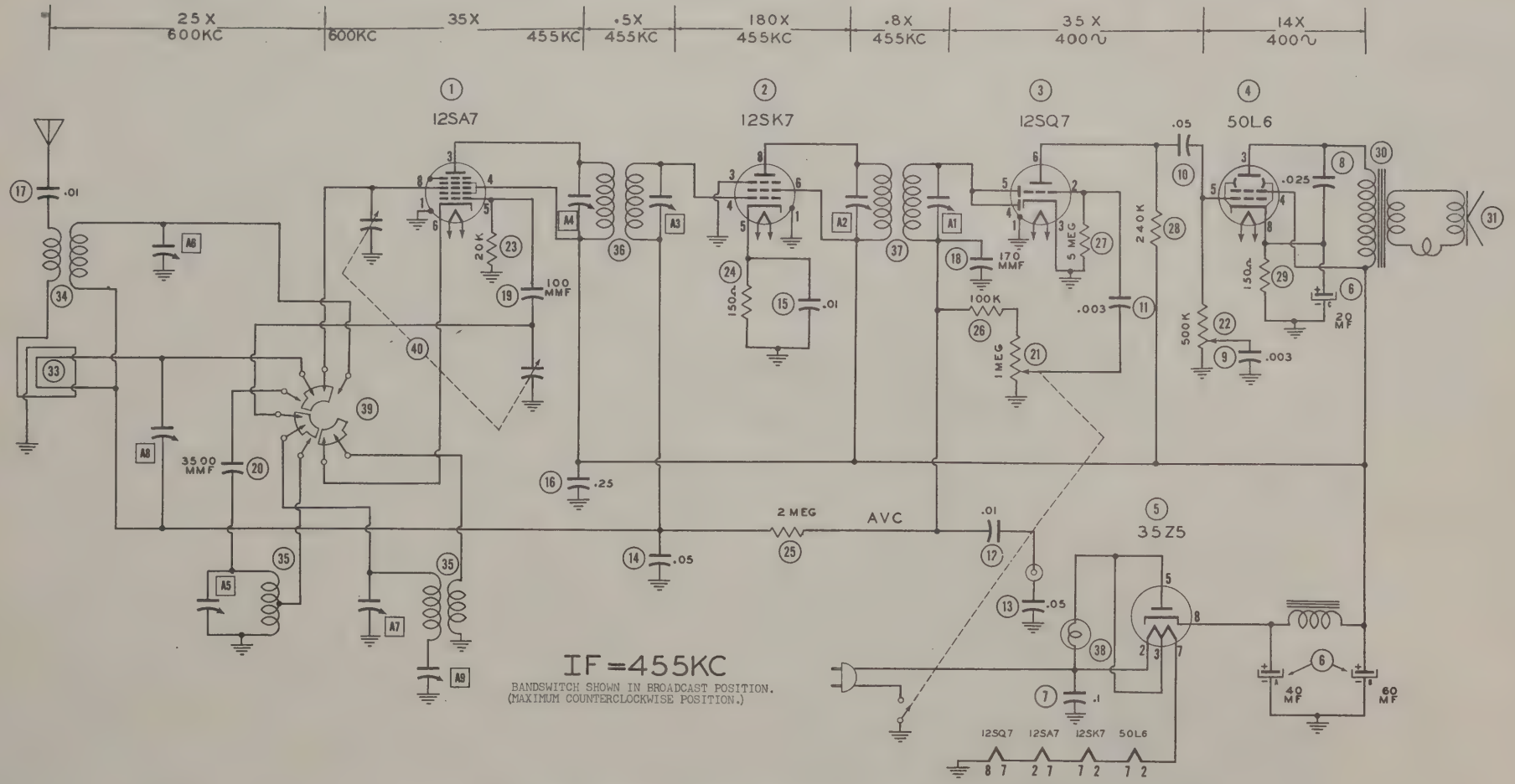
ITEM No.	PART NAME	ANDREA PART No.	NOTES
39	Switch	FM-8044	Band Changing
40	2 Gang Var. Cap	FM-897	(12.6-530 MMF) each section
A5	Dual Trimmer	MC-738	SW Osc. Adj.
A7			BC Osc. Adj.
A6	Dual Trimmer	FM-918	SW Ant. Adj.
A8			BC Osc. Padder



CHASSIS—BOTTOM VIEW



ANDREA MODEL T-U15



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	12VAC	95VDC	95VDC	-5.5VDC§	0V.	25VAC	-.25VDC
2	12SK7	0V.	37VAC	0V.	-.25VDC	1.6VDC	95VDC	25VAC	95VDC
3	12SQ7	0V.	-.45VDC	0V.	-.4VDC	-.4VDC	60VDC	12VAC	0V.
4	50L6GT	0V.	85VAC	87VDC	92VDC	0V.	0V.	37VAC	6.5VDC
5	35Z5GT	0V.	117VAC	113VAC	0V.	113VAC	95VDC	85VAC	120VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0Ω	13Ω	70KΩ	70KΩ	20KΩ	1Ω	26Ω	3 MEG.
2	12SK7	0Ω	40Ω	0Ω	3 MEG.	150Ω	70KΩ	26Ω	70KΩ
3	12SQ7	0Ω	5 MEG.	0Ω	1.3 MEG.	1.3 MEG.	320KΩ	13Ω	0Ω
4	50L6GT	INF.	90Ω	70KΩ	70KΩ	500KΩ	0Ω	40Ω	150Ω
5	35Z5GT	INF.	120Ω	117Ω	0Ω	117Ω	70KΩ	90Ω	70KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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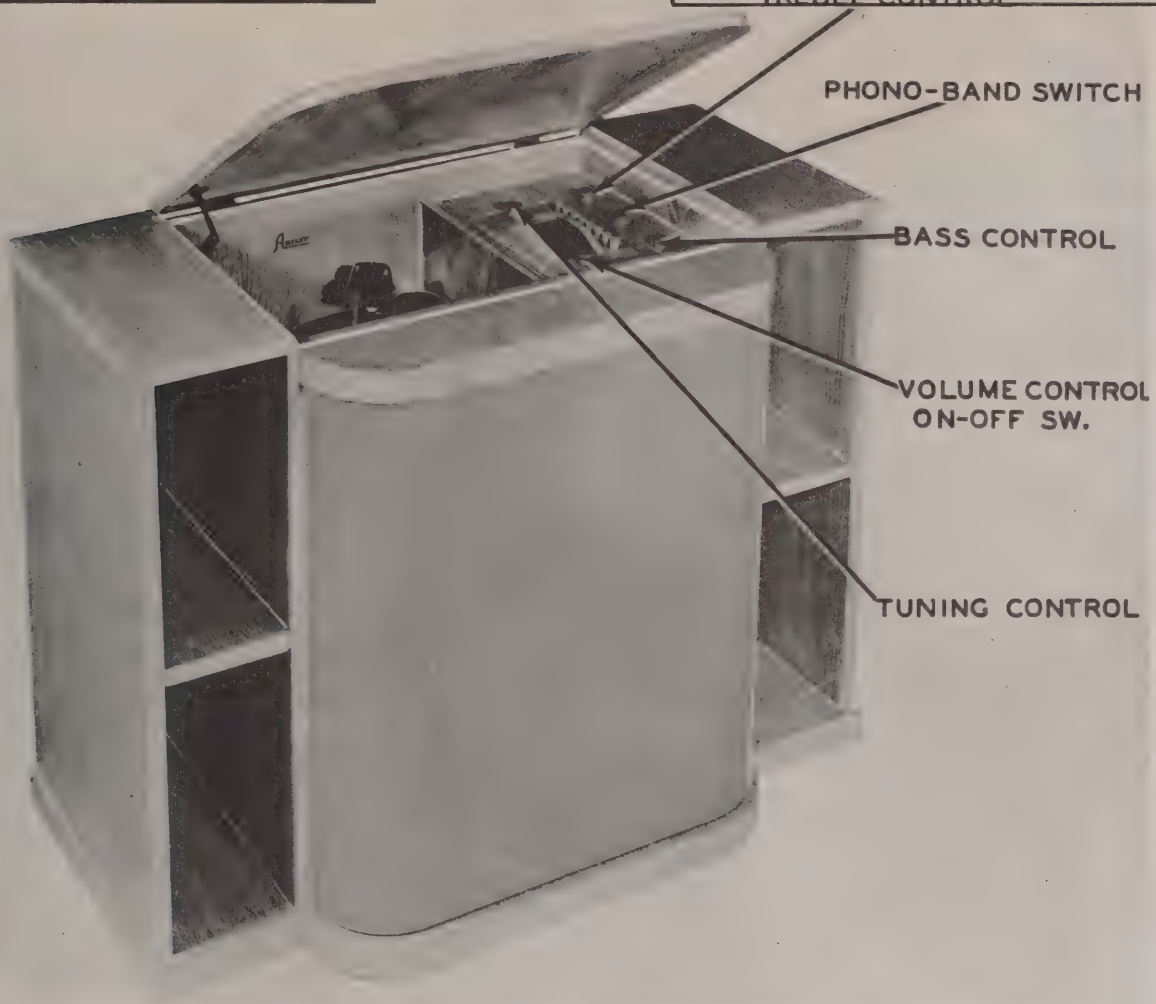
4714-7

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



ANSLEY MODEL 53

TRADE NAME	Ansley Model 53 Cabinet styles "Century", "Pembroke", "Coventry", "Normandy", "Whitby", "Winslow", "Plaza", "Salem", "Skyline"
MANUFACTURER	Ansley Radio Corp., 41 St. Joes Ave., Trenton 9, N.Y.
TYPE SET	AC Operated Phono-Radio Combination FM-AM Superheterodyne Receiver with Self Contained Loop Antenna and Pushbutton Tuning.
TUBES (EIGHTEEN)	6BA6 FM RF Amp., 6BE6 FM Mixer, 6C4 FM Osc., 6AC7 FM 1st IF Amp., 6AC7 FM 2nd IF Amp., 6SJ7 FM 1st Limiter, 6SJ7 FM 2nd Limiter, 6H6GT FM Discriminator, 6SK7 AM RF Amp., 6SA7 AM Converter, 6SK7 AM IF Amp., 6SQ7GT AM Det.-AVC-AF, 6E5 Tuning Eye, 6J5GT AF Amp., 6J5GT Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	.900 Amps. (AM), 1 Amp. (FM) @ 117V AC
TUNING RANGE - BROADCAST	540-1725KC SHORT WAVE 5.8-18.4MC FM 88-108MC

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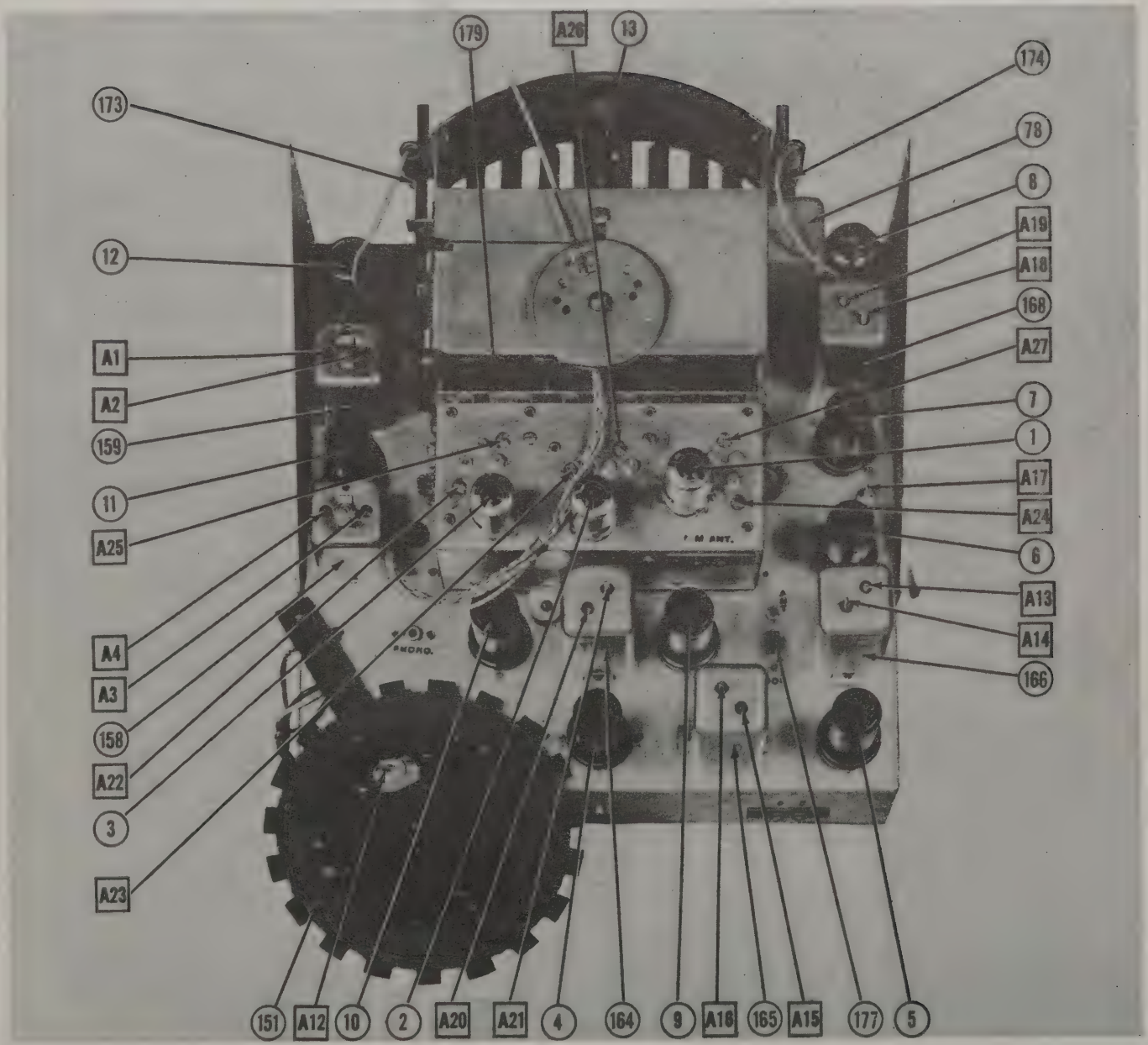
DATE 9/47 SET 24 FOLDER #4714-8

CHASSIS—TOP VIEW



ANSLEY
MODEL 53 PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ANSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	6BA6	6BA6	7BK	
2	FM Mixer	6BE6	6BE6	7CH	
3	FM Osc.	6C4	6C4	6BG	
4	FM 1st IF Amp.	6AC7	6AC7	8N	
5	FM 2nd IF Amp.	6AC7	6AC7	8N	
6	FM 1st Limiter	6SJ7	6SJ7	8N	
7	FM 2nd Limiter	6SJ7	6SJ7	8N	
8	FM Discriminator	6H6GT	6H6GT	7Q	
9	AM RF Amp.	6SK7	6SK7	8N	
10	AM Converter	6SA7	6SA7	8R	
11	AM IF Amp.	6SK7	6SK7	8N	
12	AM Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
13	Tuning Eye	6E5	6E5	6R	
14	AF Amp.	6J5GT	6J5GT	6Q	
15	Phase Inverter	6J5GT	6J5GT	6Q	
16	Power Output	6V6GT	6V6GT	7AC	
17	Power Output	6V6GT	6V6GT	7AC	
18	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ANSLEY PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
19	40	450	CE-13	UP4045	FP146	DY-40-450	EL-4	AF8J	Filter
20A	20	450	CE-1	UP6BJ38	FP234	DY-2x20-450	EL-220	AF44J	■ Filter
B	20	450							▲ "
21	25	50	CE-3	BR255	TC36	M-25-50	TA-525	PRS50-25	Cath. Bypass
22	25	25	CE-2	BR252A	TC26	M-25-25	TA-25	PRS25-25	" "
23	25	25	CE-2	BR252A	TC26	M-25-25	TA-25	PRS25-25	" "
24	25	25	CE-2	BR252A	TC26	M-25-25	TA-25	PRS25-25	" "
25	.1	400	CP-16	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Bypass
26	.05	600	CP-6	DT6S5	TP415	S-6-05	TC-15	684-05	Audio Coupling
27	.05	600	CP-6	DT6S5	TP415	S-6-05	TC-15	684-05	" "
28	.01	400	CP-2	DT4S1	TP421	S-4-01	TC-11	484-01	" "
29	.05	400	CP-6	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
30	.05	400	CP-6	DT4S5	TP426	S-4-05	TC-15	484-05	IF Plate Decoupling*
31	.05	400	CP-6	DT4S5	TP426	S-4-05	TC-15	484-05	IF Screen Bypass
32	.05	400	CP-6	DT4S5	TP426	S-4-05	TC-15	484-05	IF Cath. Bypass
33	.05	400	CP-6	DT4S5	TP426	S-4-05	TC-15	484-05	Audio Coupling
34	.05	400	CP-6	DT4S5	TP426	S-4-05	TC-15	484-05	Conv. Plate Decoup.
35	.05	400	CP-6	DT4S5	TP426	S-4-05	TC-15	484-05	Conv. Screen Bypass
36	.05	400	CP-6	DT4S5	TP426	S-4-05	TC-15	484-05	RF Cath. Bypass
37	.05	400	CP-6	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
38	.05	400	CP-6	DT4S5	TP426	S-4-05	TC-15	484-05	RF Plate Decoupling
39	500	500	CM-7	5W5T1	MC245	MO.5-35	1FM-35	1468-0005	Audio Plate Bypass
40	5000	300	CM-6	1W5D5	MC465	MW.5-25	1FM-25	1467-005	Tone Compensation
41	250	500	CM-9	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	" "
42	5000	300	CM-6	1W5D5	MC465	MW.5-25	1FM-25	1467-005	" "
43	250	500	CM-9	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Diode Filter
44	100	500	CM-4	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
45	50		CC-3	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Capacitor
46	5000	300	CM-11	1W5D1	MC465	MW.5-25	1FM-25	1467-005	Fixed Padder
47	400	500	CM-8	5W5T4	MC243	MO.5-34	1FM-34	1468-0004	Tone Compensation
48	1000		CC-1	1W5D1	MC255	MW.5-21	1FM-21	1468-001	De-emphasis
49	100		CC-5	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Disc. Filter
50	100		CC-5	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
51	10000		CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	2nd Lim. Plate Decoup.
52	10000		CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	2nd Lim. Screen Bypass
53	10		CC-6	5W5Q1	MC215	MO.5-41	MS-41	1468-00001	Limiter Coupling
54	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	1st Lim. Plate Decoup.
55	10		CC-6	5W5Q1	MC215	MO.5-41	MS-41	1468-00001	Fixed Trimmer
56	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	1st Lim. Screen Bypass
57	20		CC-4	5W5Q2		MOS-5-42	MS-42		1st Lim. Grid Filter
58	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	2nd IF Plate Decoup.
59	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	2nd IF Screen Bypass
60	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	2nd IF Cath. Bypass
61	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	1st IF Plate Decoup.
62	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	1st IF Screen Bypass
63	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	1st IF Cath. Bypass
64	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	1st IF Fil. Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANSLEY PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
119	5000Ω	10	RW-2	AB-5000	Voltage Dropping
120	3900Ω	½	RM-33	BTS-3900	Or.-White-Red AM-IF Plate Decoupling-See Note 1
121	47KΩ	½	RM-6	BTS-47K	Yl.-Vi.-Or. Diode Filter
122	220KΩ	½	RM-28	BTS-220K	Red-Red-Yl. Diode Load
123	1 Meg.	½	RM-2	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
124	3900Ω	½	RM-33	BTS-3900	Or.-White-Red 1st AF Cathode
125	270KΩ	½		BTS-270K	Red-Vi.-Yl. 1st AF Plate Load-See Note 2
126	220KΩ	½	RM-28	BTS-220K	Red-Red-Yl. Tone Compensation
127	47KΩ	½	RM-6	BTS-47K	Yl.-Vi.-Or. Tone Compensation
128	1 Meg.	½	RM-2	BTS-1 Meg.	Br.-Blk.-Grn. Tuning Eye Plate Load
129	100KΩ	½	RM-5	BTS-100K	Br.-Blk.-Yl. Series Phono-See Note 3
130	220KΩ	½	RM-28	BTS-220K	Red-Red-Yl. Phono Shunt " " 4
131	220Ω	½	RW-8	BW-½-220	Red-Red-Br. Feedback
132	24Ω	½	RW-24	BW-½-22	Red-Yl.-Blk. Feedback
133	4700Ω	½	RM-27	BTS-4700	Yl.-Vi.-Red 2nd AF Cathode
134	100KΩ	½	RM-5	BTS-100K	Br.-Blk.-Yl. 2nd AF Plate Load
135	100KΩ	½	RM-5	BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
136	4700Ω	½	RM-27	BTS-4700	Yl.-Vi.-Red Phase Inverter Cathode
137	22KΩ	½	RM-21	BTS-22K	Red-Red-Or. Phase Inverter Grid
138	220KΩ	½	RM-28	BTS-220K	Red-Red-Yl. Output Grid
139	220KΩ	½	RM-28	BTS-220K	Red-Red-Yl. Output Grid
140	250Ω	5	RW-4	AB-250	Output Cathode
141	3000Ω	10	RW-3	AB-3000	Filter
142	10KΩ	½		BTS-10K	Br.-Blk.-Or. FM 1st IF Transformer Shunt-See Note 1
143	47KΩ	½	RM-6	BTS-47K	Yl.-Vi.-Or. FM 2nd IF Transformer Shunt
144	47KΩ	½	RM-6	BTS-47K	Yl.-Vi.-Or. FM 2nd IF Transformer Shunt Pri.
145	1000Ω	½	RM-9	BTS-1000	Br.-Blk.-Red Antenna Loading SW-See Note 1

Note 1-Not used in all models.
Note 2-Some models use 220KΩ in this application. IRC replacement BTS-220K.
Note 3-Some models use 1 Meg. in this application. IRC replacement BTS-1 Meg.
Note 4-Some models use 100KΩ in this application. IRC replacement BTS-100K.

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000∿)	REPLACEMENT DATA: ANSLEY PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
146	.057A	270Ω	8 Henries	L1-4	C-1709	T20C53†	C-2981†	†Drill one new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ANSLEY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
147	117V AC @ 1.0A	730V CT @ .125A	5.2V AC @ 2.0A	6.3V AC @ 4.9A	TP-1	P-4081†	T22R33†	P-3153	†Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ANSLEY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
148	10500Ω CT	3.8Ω	500Ω CT	.4Ω	T0-1	A-3824	T22S56	A-2936†	†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA: ANSLEY PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
149	FIELD RES. 500Ω; VC IMP. 3.8Ω				
150	CONE DIA. 11½"; VC DIA. 1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ANSLEY PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
65	1000		CC-1	1W5D1	MC255	MW.5-21	1FM-21	1468-001	Osc. Plate Bypass
66	50		CC-3	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Capacitor
67	20		CC-4	5W5Q2		MOS.5-42	MS-42		Fixed Padder
68	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	Mixer Plate Decoup.
69	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	Mixer Screen Bypass
70	5		CC-2	5W5V5	MC205	MO.5-55	MS-55	1468-000005	Osc. Coupling
71	10000	300	CM-10	1D3S1	MC475	MW.3-11	1FM-11	1467-01	Mixer Cath. Bypass
72	20		CC-4	5W5Q2		MOS.5-42	MS-42		Fixed Padder
73	20		CC-4	5W5Q2		MOS.5-42	MS-42		RF Coupling
74	1000		CC-1	1W5D1	MC255	MW.5-21	1FM-21	1468-001	RF Screen Bypass
75	1000		CC-1	1W5D1	MC255	MW.5-21	1FM-21	1468-001	RF Cath. Bypass
76	1000		CC-1	1W5D1	MC255	MW.5-21	1FM-21	1468-001	" " "
77	20		CC-4	5W5T2		MOS.5-42	MS-42		Fixed Padder

*Not used in all models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	ANSLEY PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
78A	1 Meg.	1	RP-2	MR53	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 78A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
79A	500KΩ	1	RP-1	MR48	D13-133	M-60-Z	Bass Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 79A per instructions
80A	1 Meg.	1	RP-3	MR53	D13-137	M-63-Z	Treble Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 80A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ANSLEY PART No.	IRC PART No.	
81	68Ω	½	RM-34	BW-½-68	Blue-Gray-Blk. FM-RF Cathode
82	3900Ω	1	RM-47	BTA-3900	Or.-White-Red FM-RF Decoupling
83	12Ω	½	RM-35	BW-½-12	Br.-Red-Blk. Parasitic Suppressor
84	180Ω	½	RM-29	BW-½-180	Br.-Gray-Br. FM-Mixer Cathode
85	100KΩ	½	RM-5	BTS-100K	Br.-Blk.-Yl. Parasitic Suppressor
86	22KΩ	½	RM-21	BTS-22K	Red-Red-Or. FM-Mixer Injection Grid
87	56KΩ	1	RM-48	BTA-56K	Grn.-Blue-Or. FM Mixer Screen Dropping
88	4000Ω	10	RW-22	AB-4000	Voltage Dropping
89	22KΩ	½	RM-21	BTS-22K	Red-Red-Or. FM Oscillator Grid
90	68Ω	½	RM-34	BW-½-68	Blue-Gray-Blk. FM Oscillator Cathode
91	150Ω	½	RM-30	BW-½-150	Br.-Grn.-Br. FM 1st IF Cathode
92	56KΩ	½	RM-37	BTS-56K	Grn.-Blue-Or. FM 1st IF Screen Dropping
93	1000Ω	½	RM-9	BTS-1000	Br.-Blk.-Red FM 1st IF Plate Decoupling
94	150Ω	½	RM-30	BW-½-150	Br.-Grn.-Br. FM 2nd IF Cathode
95	56KΩ	½	RM-37	BTS-56K	Grn.-Blue-Or. FM 2nd IF Screen Dropping
96	1000Ω	½	RM-9	BTS-1000	Br.-Blk.-Red FM 2nd IF Plate Decoupling
97	22KΩ	½	RM-21	BTS-22K	Red-Red-Or. FM 1st Limiter Grid
98	470KΩ	½	RM-26	BTS-470K	Yl.-Vi.-Yl. FM 1st Limiter Screen Dropping
99	15KΩ	½	RM-23	BTS-15K	Br.-Grn.-Or. FM 1st Limiter Screen Bleeder
100	470KΩ	½	RM-26	BTS-470K	Yl.-Vi.-Yl. FM 1st Limiter Plate Dropping
101	22KΩ	½	RM-21	BTS-22K	Red-Red-Or. FM 2nd Limiter Grid
102	470KΩ	½	RM-26	BTS-470K	Yl.-Vi.-Yl. FM 2nd Limiter Screen Dropping
103	15KΩ	½	RM-23	BTS-15K	Br.-Grn.-Or. FM 2nd Limiter Screen Bleeder
104	1 Meg.	½	RM-2	BTS-1 Meg.	Br.-Blk.-Grn. FM 2nd Limiter Plate Dropping
105	1 Meg.	½	RM-2	BTS-1 Meg.	Br.-Blk.-Grn. FM Tuning Eye Grid
106	100KΩ	½	RM-5	BTS-100K	Br.-Blk.-Yl. FM Discriminator Load
107	100KΩ	½	RM-5	BTS-100K	Br.-Blk.-Yl. FM Discriminator Load
108	100KΩ	½	RM-5	BTS-100K	Br.-Blk.-Yl. De-emphasis
109	470KΩ	½	RM-26	BTS-470K	Yl.-Vi.-Yl. AVC Network
110	4000Ω	10	RW-22	AB-4000	AM-RF Screen Bleeder
111	330Ω	½	RW-14	BW-½-330	Or.-Or.-Br. AM-RF Cathode
112	4700Ω	½	RM-27	BTS-4700	Yl.-Vi.-Red AM-RF Coil Shunt B.C.
113	3900Ω	½	RW-33	BTS-3900	Or.-White-Red AM-RF Plate Decoupling
114	68Ω	½	RM-33	BW-½-68	Blue-Gray-Blk. Parasitic Suppressor
115	22KΩ	½	RM-21	BTS-22K	Red-Red-Or. AM Oscillator Grid
116	3900Ω	½	RM-33	BTS-3900	Or.-White-Red AM Converter Plate Decoupling
117	330Ω	½	RW-14	BW-½-330	Or.-Or.-Br. AM IF Cathode
118	4700Ω	½	RM-27	BTS-4700	Yl.-Vi.-Red AM IF Screen Dropping

DATE 9/47 SET 24 FOLDER #4714-8

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ANSLEY PART No.	MEISSNER PART No.	
151	Loop Ant.		1Ω	LP-5		
152	BC Ant.Coil	1.8Ω	7Ω	LA-2	14-1026	
153	SW Ant.Coil	.3Ω	0Ω	LA-5	14-1044	
154	BC RF Coil	17Ω	7Ω	LR-2	14-1027	
155	SW RF Coil	.3Ω	0Ω	LR-5	14-1045	
156	BC Osc.Coil	1Ω	5Ω	LO-1	14-1040	
157	SW Osc.Coil	.2Ω	0Ω	LO-5		
158	AM Input IF	13Ω	13Ω	T1-1	16-6658	
159	AM Output IF	13Ω	13Ω	T1-1	16-6660	
160	FM Ant.					
161	FM Ant. Coil	0Ω	0Ω	LA-3		
162	FM RF Coil		0Ω	LR-4		
163	FM Osc.Coil		0Ω	LO-2		
164	FM Input IF	.6Ω	.6Ω	T1-2		
165	FM Inter.IF	.6Ω	.6Ω	T1-5		
166	FM OutputIF	.6Ω	.6Ω	T1-6		
167	FM Limiter		.3Ω	LF-1		
168	FM Disc. Trans.	.6Ω	.6Ω	LD-1		
169	Fil. Choke		0Ω			
170	Fil. Choke		0Ω			
171	Plate Choke		1Ω			
172	RF Choke		42Ω			
180	Fil. Choke		0Ω			
181	Plate Choke		0Ω			

DIAL LIGHT

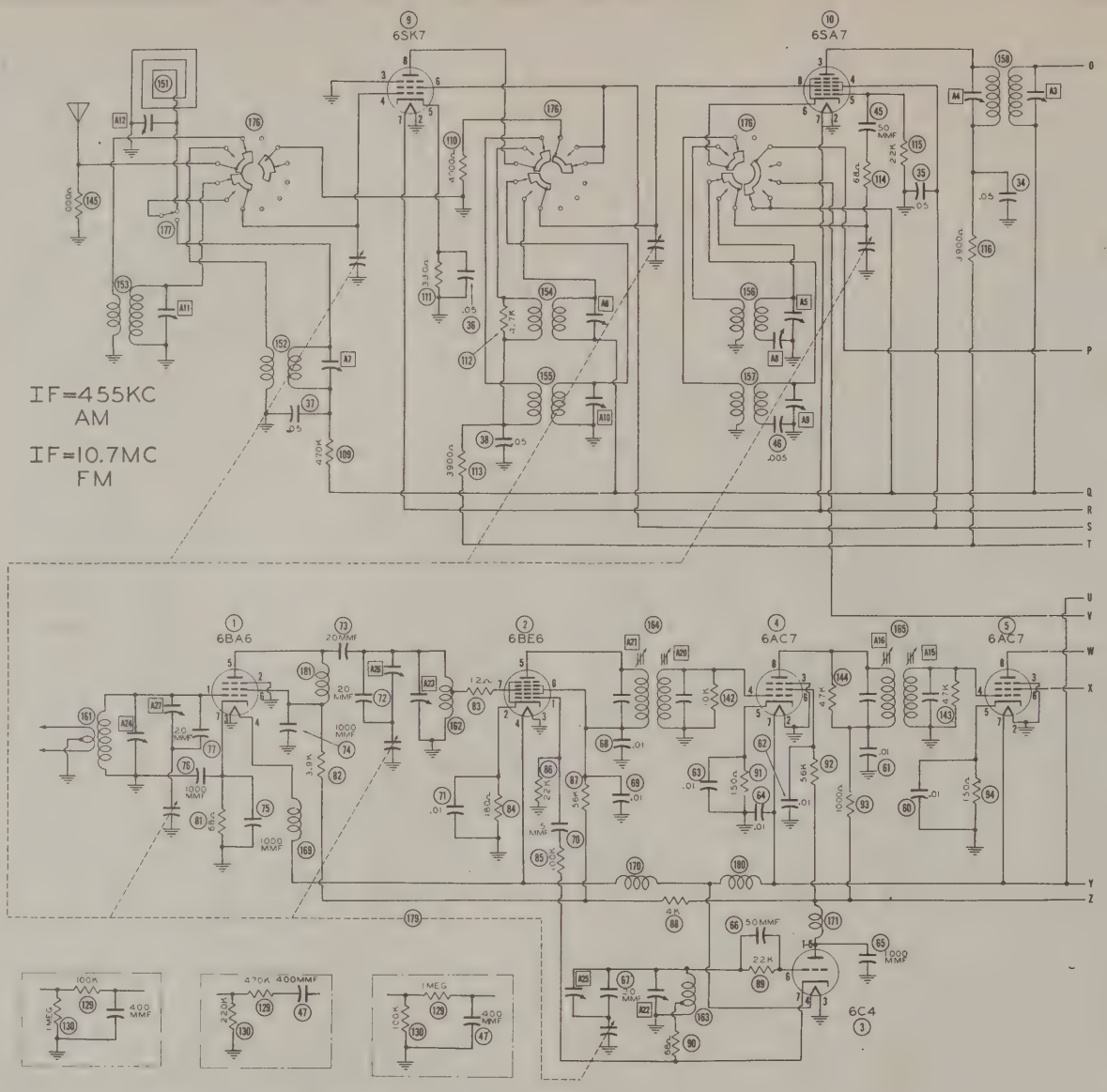
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ANSLEY PART No.		
173	Bayonet	6-8	0.15	Brown			Type 47
174	"	"	"	"			"

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	ANSLEY PART No.	ASTATIC PART No.	
175		Nylon-1J	

MISCELLANEOUS

ITEM No.	PART NAME	ANSLEY PART No.	NOTES
176	Switch		Radio-Phono-Band
177	"		Antenna SPDT
178	Fuse		2 Amp.
179	Tuning Capacitor	CV-5	(13-482 MMF) each section



ALTERNATE · PHONO CIRCUITS

LOOP-ANTENNA SWITCH IN LOOP POSITION.
VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	6BA6	0V.	0V.	6.3VAC	0V.	97VDC	97VDC	1.0VDC	-
‡ 2	6BA6	-.5VDC	1.9VDC	6.3VAC	0V.	90VDC	92VDC	0V.	-
‡ 3	6C4	245VDC	0V.	6.3VAC	0V.	245VDC	0V.	2.4VDC	-
‡ 4	6AC7	0V.	0V.	0V.	0V.	1.8VDC	125VDC	6.3VAC	235VDC
‡ 5	6AC7	0V.	0V.	0V.	0V.	1.5VDC	125VDC	6.3VAC	235VDC
‡ 6	6SJ7	0V.	0V.	0V.	-.3VDC	0V.	6VDC	6.3VAC	105VDC
‡ 7	6SJ7	0V.	0V.	0V.	-.3VDC	0V.	8VDC	6.3VAC	60VDC
‡ 8	6H6GT	0V.	0V.	-3.3VDC	-.8VDC	-.6VDC	0V.	6.3VAC	0V.
9	6SK7	0V.	0V.	0V.	0V.	3.0VDC	92VDC	6.3VAC	265VDC
10	6SA7	0V.	0V.	275VDC	92VDC	-5VDC§	.1VDC	6.3VAC	-.2VDC
11	6SK7	0V.	0V.	0V.	-1.2VDC	.1VDC	85VDC	6.3VAC	280VDC
12	6SQ7GT	0V.	0V.	1.5VDC	.4VDC	.4VDC	165VDC	0V.	6.3VAC
14	6J5GT	0V.	0V.	135VDC	280VDC	0V.	0V.	6.3VAC	6.3VDC
15	6J5GT	0V.	0V.	140VDC	280VDC	0V.	0V.	6.3VAC	6.9VDC
16	6V6GT	0V.	0V.	295VDC	300VDC	0V.	0V.	6.3VAC	18VDC
17	6V6GT	0V.	0V.	295VDC	300VDC	0V.	280VDC	6.3VAC	18VDC
18	5Y3GT	0V.	350VDC	0V.	365VAC	0V.	365VAC	0V.	350VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	6BA6	0Ω	0Ω	.1Ω	0Ω	100KΩ	100KΩ	70Ω	-
‡ 2	6BA6	23KΩ	10KΩ	.1Ω	0Ω	.5KΩ	0KΩ	1Ω	-
‡ 3	6C4	96KΩ	0Ω	.1Ω	0Ω	0KΩ	2KΩ	7Ω	-
‡ 4	6AC7	0Ω	0Ω	0Ω	0Ω	190Ω	150KΩ	.1Ω	0KΩ
‡ 5	6AC7	0Ω	0Ω	0Ω	0Ω	140Ω	150KΩ	.1Ω	0KΩ
‡ 6	6SJ7	0Ω	0Ω	0Ω	2.5KΩ	0Ω	0KΩ	.1Ω	0KΩ
‡ 7	6SJ7	0Ω	0Ω	0Ω	21KΩ	0Ω	0KΩ	.1Ω	1.1 Meg.
‡ 8	6H6GT	0Ω	0Ω	100KΩ	280KΩ	100KΩ	INF.	.1Ω	0Ω
9	6SK7	0Ω	0Ω	0Ω	2Ω	3.0Ω	3.0KΩ	.1Ω	13KΩ
10	6SA7	0Ω	0Ω	13KΩ	3.0KΩ	2.1KΩ	1Ω	.1Ω	1.1 Meg.
11	6SK7	0Ω	0Ω	0Ω	1.1 Meg.	300Ω	0KΩ	.1Ω	0KΩ
12	6SQ7GT	0Ω	1 Meg.	4KΩ	270KΩ	270KΩ	270KΩ	0Ω	.1Ω
14	6J5GT	0Ω	0Ω	110KΩ	0KΩ	80KΩ	0Ω	.1Ω	0KΩ
15	6J5GT	0Ω	0Ω	110KΩ	0KΩ	25KΩ	INF.	.1Ω	0Ω
16	6V6GT	0Ω	0Ω	0KΩ	0KΩ	270KΩ	0KΩ	.1Ω	0KΩ
17	6V6GT	0Ω	0Ω	0KΩ	0KΩ	250KΩ	0KΩ	.1Ω	0KΩ
18	5Y3GT	INF.	0KΩ	INF.	120Ω	INF.	115Ω	INF.	0KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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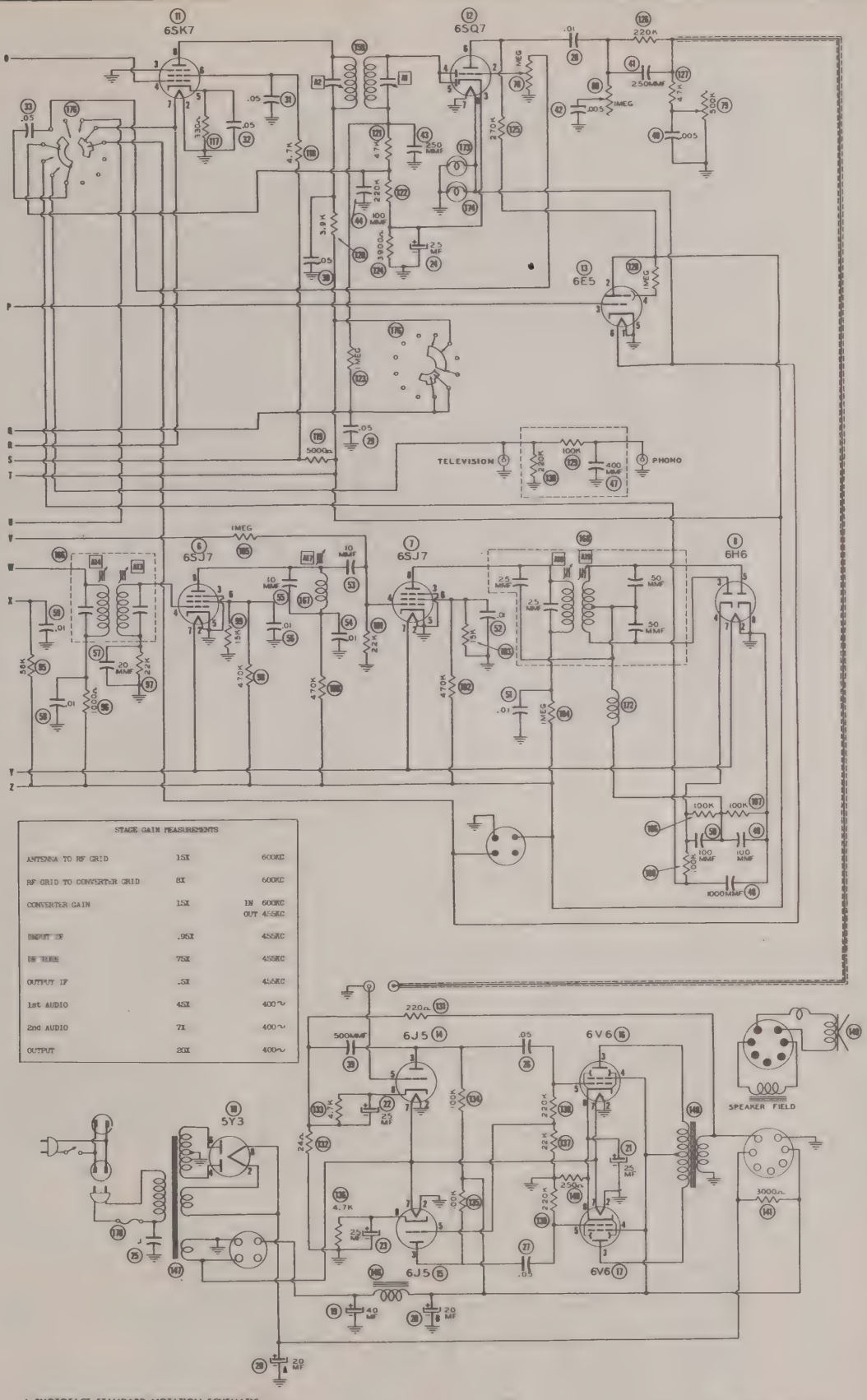
4714-8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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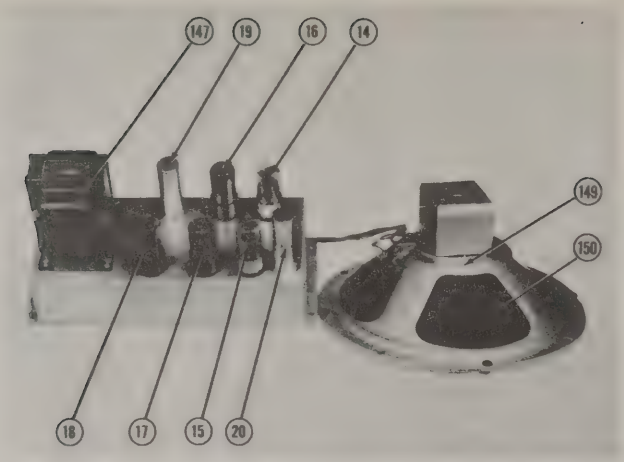
4714-8

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.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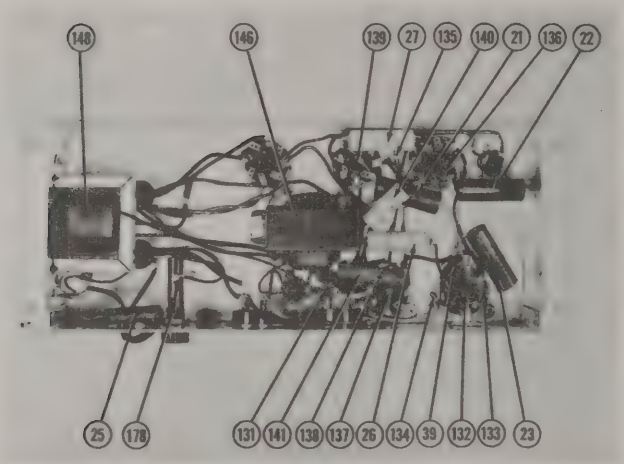
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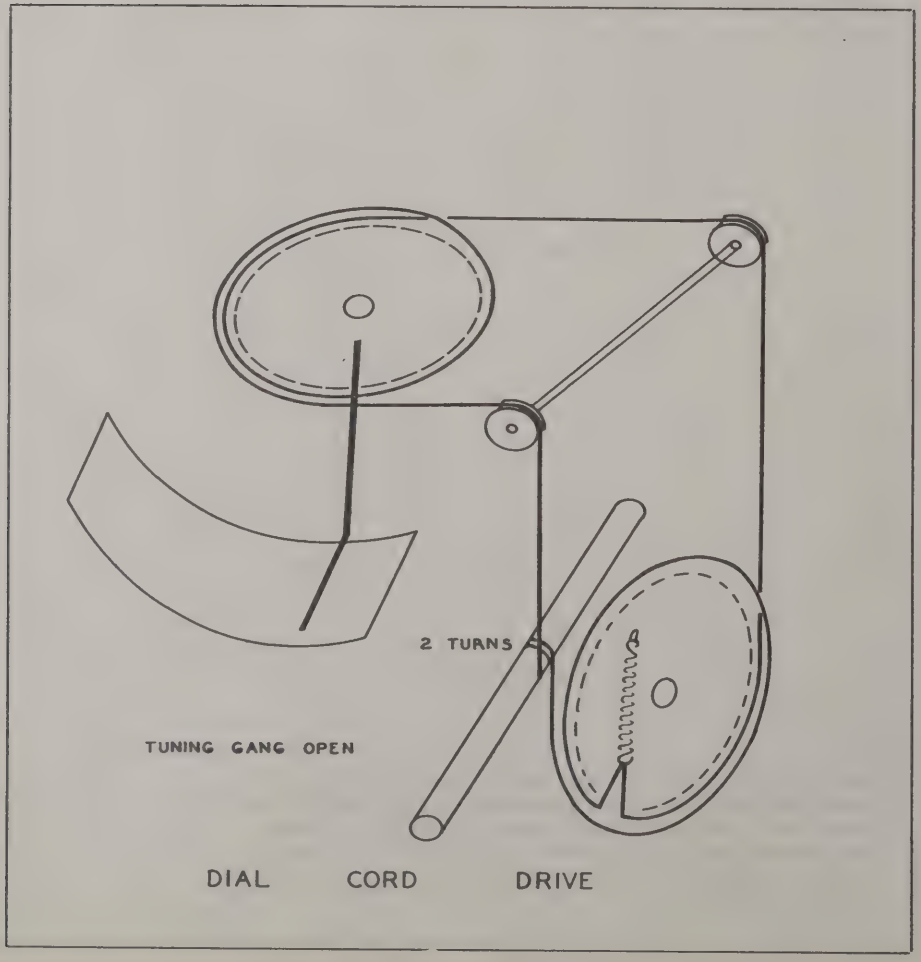
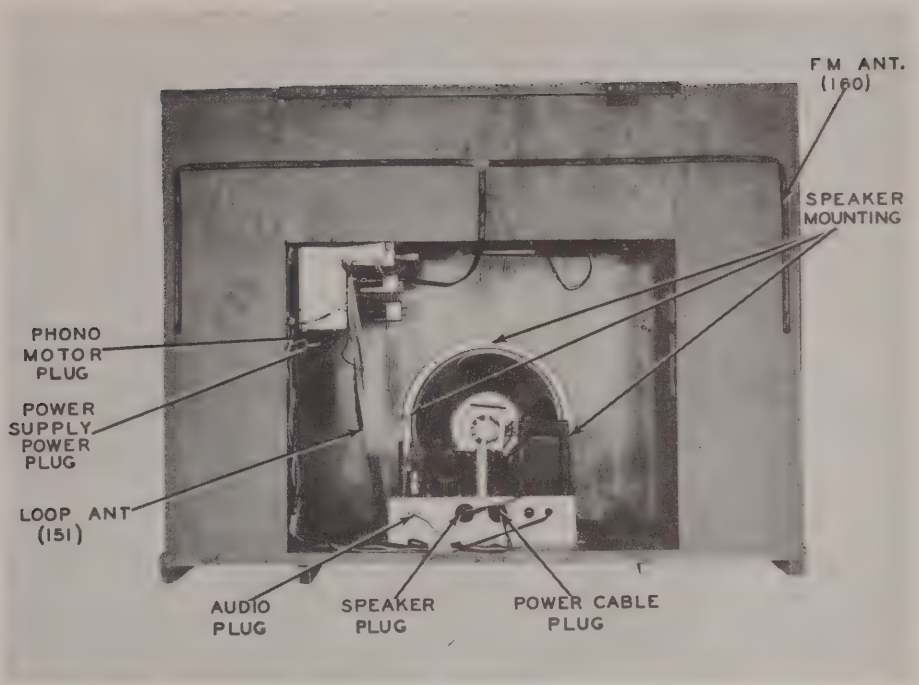

2 TURNS
TUNING GANG OPEN
DIAL CORD DRIVE



DISASSEMBLY INSTRUCTIONS

1. Loosen set screws and remove five control knobs.
2. Remove speaker, power and audio plugs from amplifier chassis.
3. Remove bonding strap from main chassis and from amplifier chassis.
4. Remove FM dipole from main chassis.
5. Remove phono-motor and phono-pickup plugs from main chassis.
6. Remove three clamps from cabinet holding leads from main chassis to amplifier chassis.
7. Remove four screws holding amplifier chassis in cabinet. Remove from cabinet.
8. Remove four screws holding speaker in cabinet. Remove from cabinet.
9. Remove four bolts from top panel.
10. Lift top panel and chassis out through top of cabinet.
11. Remove six bolts holding panel on front of chassis. Remove panel from chassis.

PUSHBUTTON ADJUSTMENTS

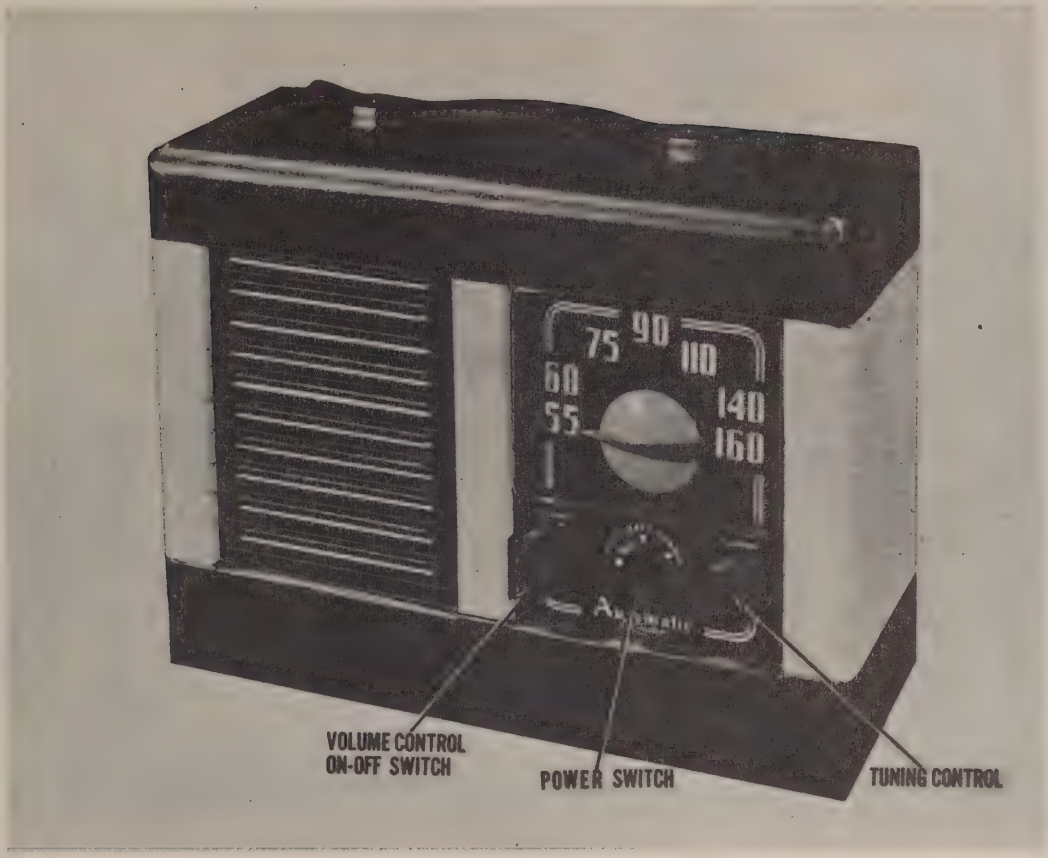
1. Turn receiver on and allow it to warm up for at least 15 minutes.
2. Loosen pushbuttons by turning them counter-clockwise about one turn.
3. Manually tune in first station desired to be set up and push in completely any pushbutton.
4. Holding button in tighten firmly.
5. Check accuracy of setting by detuning with manual tuning control and retuning with pushbutton. If setting is off slightly repeat Steps 2, 3, 4 and 5.
6. To set up the remaining buttons follow the same procedure as outlined above.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Volume, bass and treble controls should be fully clockwise, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Standard RMA dummy consists of 200 MMFD in series with 20 microhenries with 400 MMFD in series with 400Ω shunting the 20 microhenry coil.
When aligning FM IF & RF use a 20,000Ω per volt DC meter or VTVM for an output indicator. Allow receiver to warm up for at least twenty minutes before attempting alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to Pin 4 (grid) 6SK7 IF Tube (11). Low side to chassis.	455KC	BC (Ant. switch in ant. position)	Tuning cap. fully open.	Across voice coil	A1,A2,	Adjust for maximum output.
2	.05 MFD.	High side to Pin 8 (grid) 6SA7. Low side to chassis.	"	"	"	"	A3,A4.	" " " "
3	.05 MFD.	High side to Pin 4 (grid) 6SK7 RF Tube (9). Low side to chassis.	1600KC	"	1600KC	"	A5	" " " "
4	Standard RMA Dummy	High side to ext. "AM" ant. terminal. Low side to chassis.	"	"	Tune for maximum output.	"	A6,A7.	" " " "
5	"	"	600KC	"	600KC	"	A8	Adjust for maximum output. Repeat Steps 3, 4 and 5 until no further improvement can be made.
6	.05 MFD.	High side to Pin 4 (grid) 6SK7 RF Tube (9). Low side to chassis.	12MC	SW	12 MC	"	A9	Adjust for maximum output.
7	.05 MFD.	"	12MC	SW	Tune for maximum output.	"	A10	"
8	400Ω Carbon Res.	High side to ext. "AM" ant. terminal. Low side to chassis.	12MC	"	"	"	A11	"
9		Loop	1600KC	BC (ant. switch in loop pos.)	Tune for maximum output.	"	A12	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
10	DIRECT	High side to Pin 4 (grid) 6AC7 2nd IF Tube (5). Low side to chassis.	10.7MC unmodulated	FM	Tuning cap. fully open.	VTVM-Connect high side in series with 1 Meg. Ω resistor to pin 4 (grid) of 6SJ7 1st limiter tube (6). Low side to chassis	A13,A14	Shunt primary and secondary of 3rd FM IF Trans. with 22000Ω. Adjust for maximum deflection. Do not remove 22000Ω shunts.
11	DIRECT	High side to Pin 4 (grid) 6AC7 1st FM IF Tube (4). Low side to chassis.	"	"	"	"	A15,A16	Shunt primary and secondary of 2nd IF Trans. with 22KΩ. Adjust for maximum deflection. Do not remove shunts.
12	DIRECT	"	"	"	"	Same as Step 10 except to 2nd limiter grid. Pin 4 of 6SJ7 Tube (7).	A17	Adjust for maximum deflection.
13	DIRECT	"	"	"	"	VTVM connected from junction of resistors 106 and 107 to chassis.	A18	" " "
14	DIRECT	"	"	"	"	VTVM connected from junction of cap. 48 & resistor (108) to chassis.	A19	Adjust for zero deflection. Tune signal generator to 10.775MC and record reading. Tune signal generator to 10.825MC and record reading. If these two readings are not equal repeat Steps 13 and 14 until they are. (Use enough signal to saturate limiters.)
15	DIRECT	High side to Pin 7 (grid) of 6BE6. Low side to chassis.	"	"	"	VTVM connect high side in series with 1 Meg.Ω resistor to Pin 4 (grid) of 6SJ7 1st limiter tube (6). Low side to chassis	A20,A21	Shunt primary of 1st FM Trans. with 22KΩ. Adjust for maximum deflection. Remove all shunts from previous steps.
16	2-100Ω resistors	High side in series with 100Ω to ant. terminal. Low side in series with 100Ω to ground terminal of FM Ant. terminal strip.	107.9MC (unmodulated)	"	Channel 300	"	A22	Adjust for maximum deflection. Tune signal generator to approximately 86.5 The image signal should be heard. If it is not retune signal generator to 107.9 and readjust A22. Keep input sufficiently low so that VTVM deflection does not exceed 3 volts DC.
17	"	"	"	"	Tune for maximum output.	"	A23,A24	Adjust for maximum deflection.
18	"	"	87.9MC	"	Channel 200	"	A25, A26,A27	Adjust for maximum deflection. Repeat Steps 16, 17 and 18 until no further improvement can be made.

AUTOMATIC MODEL
C-60X BATTERY OPERATED



AUTOMATIC MODEL
C-60X BATTERY OPERATED

AUTOMATIC MODEL C-60X

TRADE NAME	Automatic, Model C-60X
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output
POWER SUPPLY	110-120 Volts AC or 6 Volt "A" Supply & 90 Volt "B" Supply
RATING	.130 Amp. @ 117 Volts AC or 54 MA @ 6 Volts DC & 11MA @ 90 Volts DC
TUNING RANGE—BROADCAST	538-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD. capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation, transformer reduce dummy ant. to 200 MMF to reduce hum modulation.
2		Loop	1600KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

AUTOMATIC MODEL C-60X
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3Q4	3Q4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	30	150	CE-60			DY-2x30-150	EL-230	AF66D	■ Filter
B	25	150						PRS25-100	▲ "
C	200	10				M-250-12	UHC-212	PRS25-100	Filament Bypass
6	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
7	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	Output Plate Bypass
8	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	Audio Coupling
9	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	Audio Plate Decoup.
10	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Audio Screen Bypass
11	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	Audio Coupling
12	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	Screen Bypass
13	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	Filament Bypass
14	.1	200		DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
15	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	" "
16	200	500		5W5T2	MC237	MO.5-32	1FM-32	1468-0002	Audio Plate Bypass
17	200	500		5W5T2	MC237	MO.5-32	1FM-32	1468-0002	Diode Filter
18	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	750KΩ	1	RV44B	MR51	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 19A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

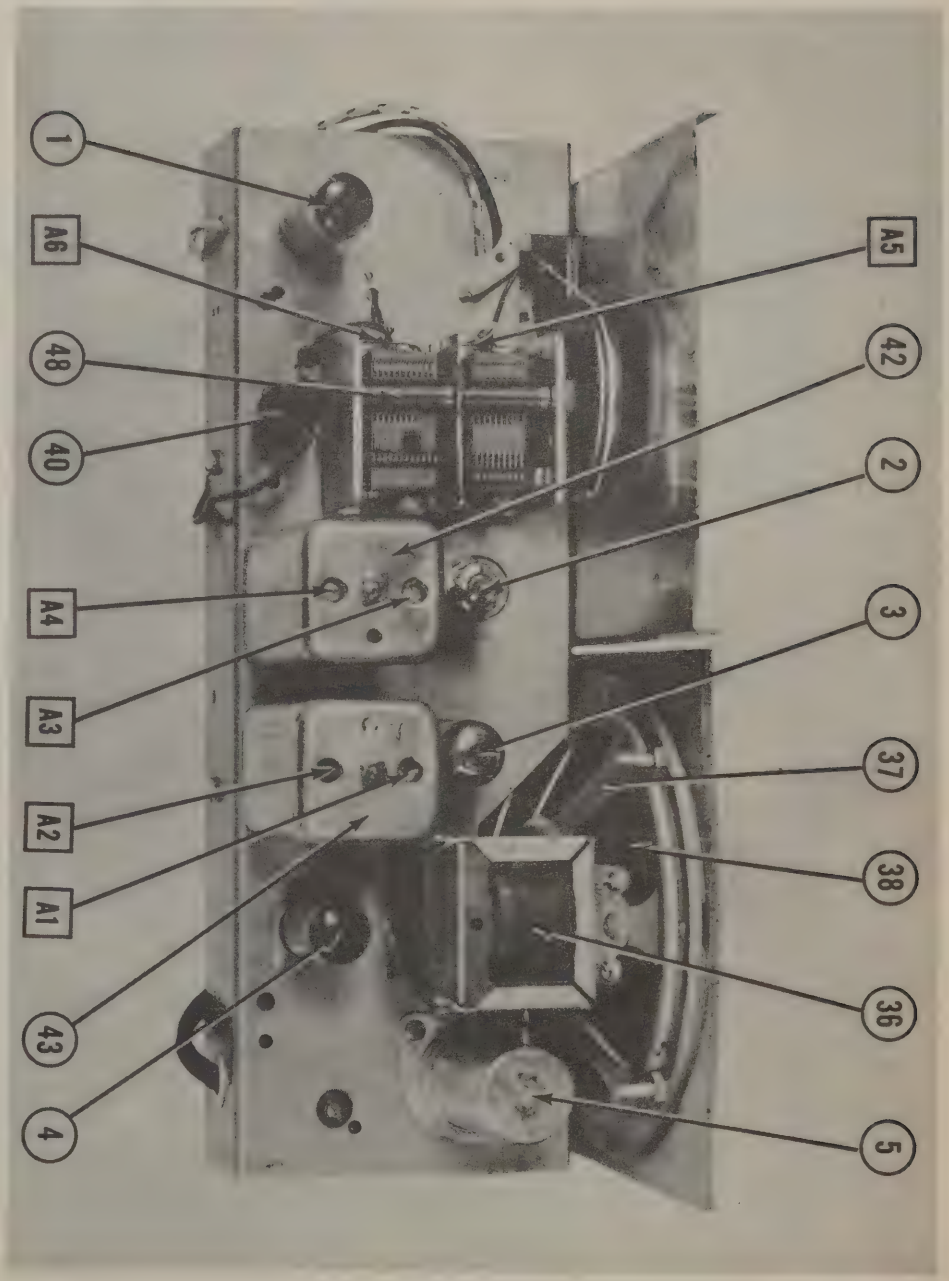
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	IDENTIFICATION CODES
20	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AVC Network
21	250KΩ	½		BTS-270K	Red-Grn.-Yl. Oscillator Grid
22	2000Ω	½		BTS-2200	Red-Blk.-Red Filament String
23	620Ω	½		"	Blue-Red-Br. " "
24	20KΩ	½		BTS-20K	Red-Blk.-Or. Screen Dropping
25	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn. AVC Network
26	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AVC Network
27	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
28	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Screen Dropping
29	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
30	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Decoupling
31	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. Output Grid
32	620Ω	½			Blue-Red-Br. Filament String
33	1100Ω	1		BTA-1200	Br.-Br.-Red Filter
34	2250Ω	10		AB-2250	Filament String
35	100Ω	2		BW-2-100	Br.-Blk.-Br. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AUTOMATIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
36	14000Ω	3.4Ω	900Ω	.45Ω	Part of PM-602	A-3849*	T22S48*	A-2934*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA AUTOMATIC PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
37	PM	3.4Ω	PM-602	Mod. P5-X		
	CONE DIA.	VC DIA.				
38	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AUTOMATIC PART No.	MEISSNER PART No.	
39	Loop Ant.		1.1Ω			
40	Loop Load. Coil		1.6Ω			
41	Osc. Coil	1Ω	5Ω		14-1040	
42	Input IF	25Ω	26Ω		16-6658	
43	Output IF	18Ω .5Ω§	16Ω			

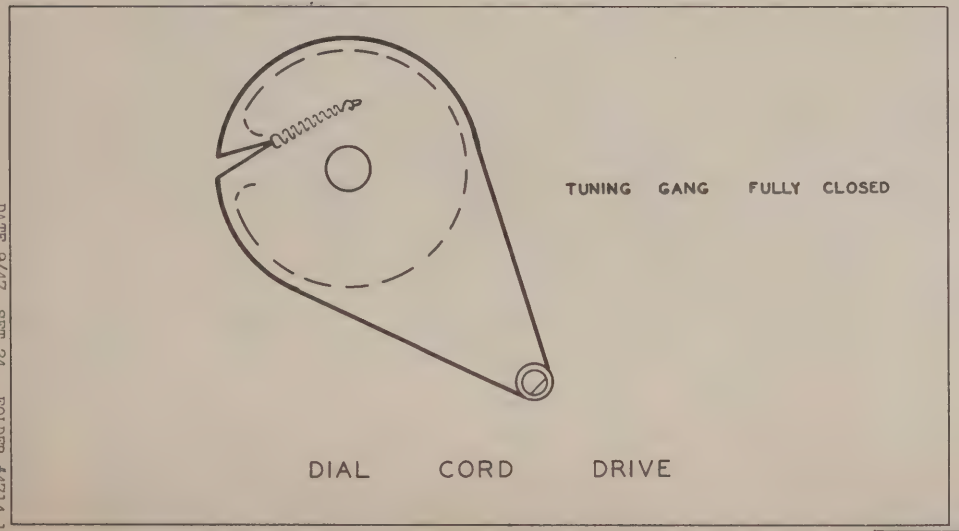
§Screen winding

BATTERIES

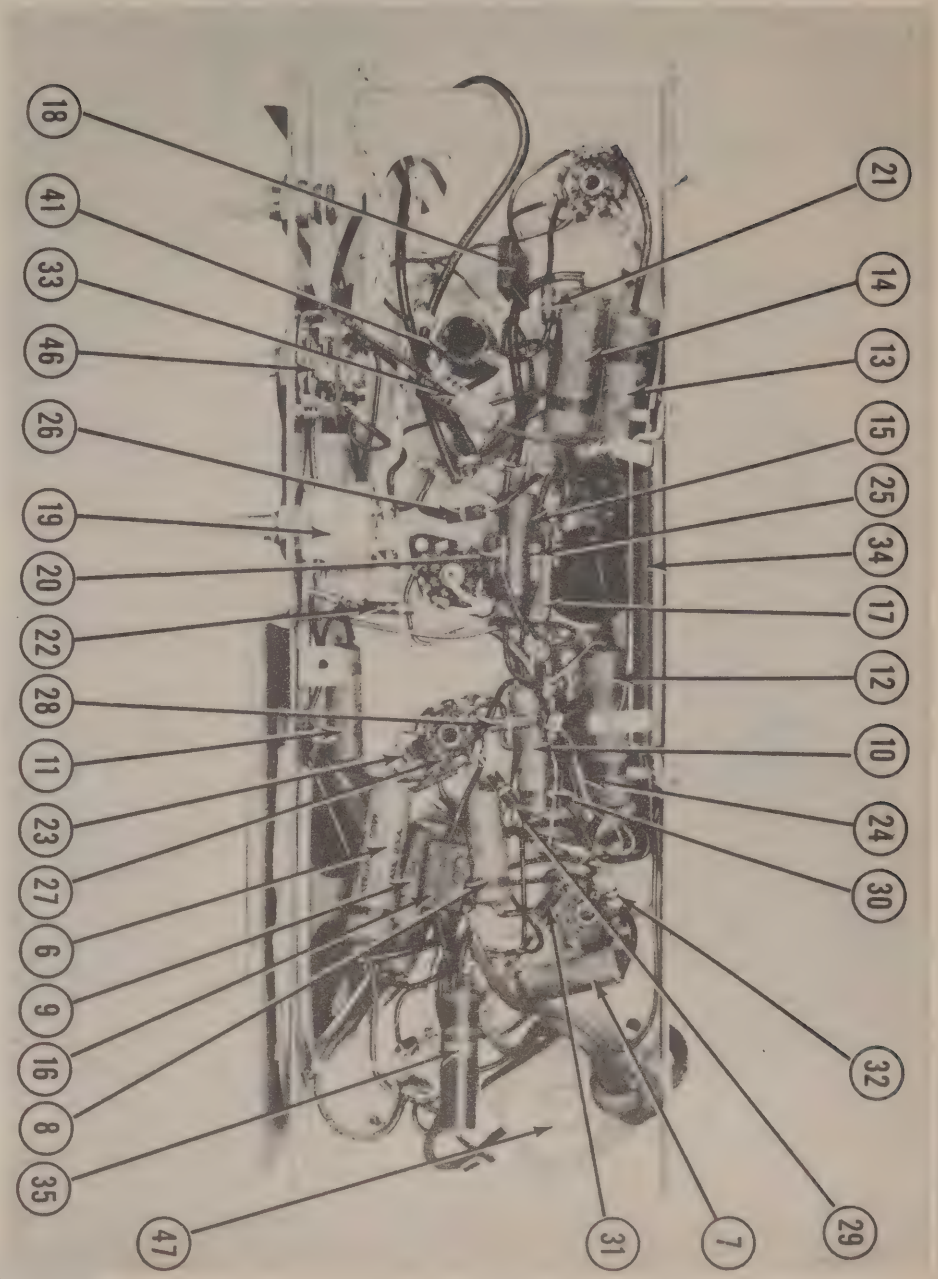
ITEM No.	VOLTAGE	AUTOMATIC PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
44	6V "A"		#747			
45	90V "B"			(2)#482		2 Used in Series

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
46	Switch		Power Selector
47	Rectifier		Selenium
48	2 Gang Var. Cap		22-394 MMF, 37-199 MMF

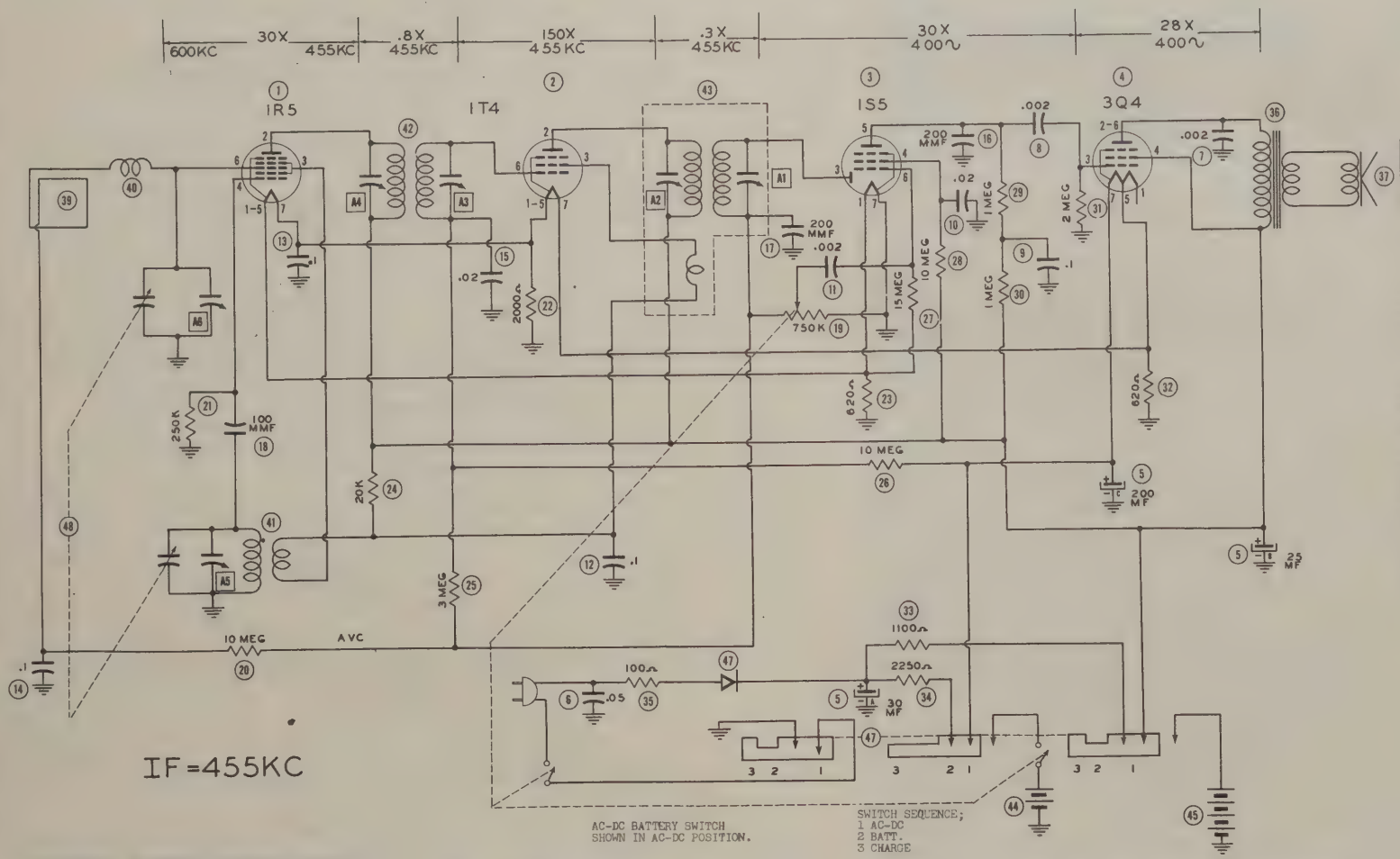


CHASSIS—BOTTOM VIEW



AUTOMATIC MODEL C-60X BATTERY OPERATED

AUTOMATIC MODEL C-60X BATTERY OPERATED



VOLTAGE AND RESISTANCE READINGS
TAKEN IN AC-DC POSITION.

Pin	1R5		1T4	
No.	Volt.	Res.	Volt.	Res.
1	1.3VDC	*	2.9VDC	*
2	98VDC	3.3KΩ	98VDC	3.3KΩ
3	57VDC	23KΩ	57VDC	23KΩ
4	-3VDC§	240KΩ	0V.	INF.
5	1.3VDC	*	2.9VDC	*
6	.5VDC	13 Meg.	.5VDC	3 Meg.
7	2.9VDC	*	4.3VDC	*

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin	1S5		3Q4	
No.	Volt.	Res.	Volt.	Res.
1	1.3VDC	*	4.3VDC	*
2	0V.	INF.	94VDC	4.2KΩ
3	.5VDC	600KΩ	0V.	2 Meg.
4	4VDC	10 Meg.	98VDC	3.3KΩ
5	12VDC	2 Meg.	4.3VDC	*
6	-.1VDC	15 Meg.	94VDC	4.2KΩ
7	0V.	0Ω	5.7VDC	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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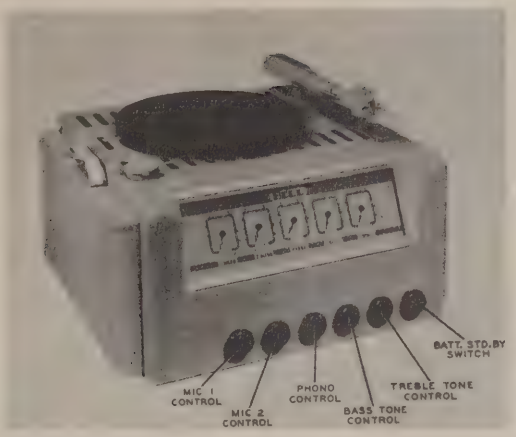
4714-10

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment etc., that an absolute reading is impractical. AVC is made inoperative by connecting a jumper across the two outside terminals of the volume control during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.



BELL SOUND MODEL 3728M

TRADE NAME	Bell Sound Model 3728M
MANUFACTURER	Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio
TYPE SET	AC-Battery Operated 3 Channel Nine Tube Amplifier
TUBES (NINE)	Types, 7B4 Mic. 1 Amp., 7B4 Mic. 2 Amp., 7B4 AF Amp., 6SL7GT AF Phase Inv., (2) 6L6GA Power Output, 7Y4 Bias Rectifier, (2) 7Z4 Rectifier.
RATING	1.2 Amp. @ 117V AC or 19 Amp. @ 6.3V DC
POWER SUPPLY	117 Volts AC or 6 Volt Storage Battery

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B4	3.0VAC	115VDC	-.3VDC	0V.	0V.	-.3VDC	0V.	3.0VAC
2	7B4	3.0VAC	120VDC	-.4VDC	0V.	0V.	-.4VDC	0V.	3.0VAC
3	7B4	3.0VAC	185VDC	0V.	0V.	0V.	0V.	1.35VDC	3.0VAC
4	6SL7GT	0V.	240VDC	2.1VDC	0V.	235VDC	2.1VDC	3.0VAC	3.0VAC
5	6L6GA	0V.	3.0VAC	380VDC	370VDC	-30VDC	0V.	3.0VAC	0V.
6	6L6GA	0V.	3.0VAC	380VDC	370VDC	-30VDC	0V.	3.0VAC	0V.
7	7Y4	3.0VAC	-46VDC	-155VDC	0V.	0V.	-155VDC	370VAC	3.0VAC
8	7Z4	3.0VAC	0V.	400VAC	0V.	0V.	400VAC	430VDC	3.0VAC
9	7Z4	3.0VAC	0V.	400VAC	0V.	0V.	400VAC	430VDC	3.0VAC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B4	24Ω	320KΩ	10 MEG.	INF.	INF.	10 MEG.	0Ω	24Ω
2	7B4	24Ω	320KΩ	10 MEG.	INF.	INF.	10 MEG.	0Ω	24Ω
3	7B4	24Ω	320KΩ	INF.	INF.	INF.	410K	2.8KΩ	24Ω
4	6SL7GT	15KΩ	130KΩ	550Ω	1 MEG.	130KΩ	550Ω	24Ω	24Ω
5	6L6GA	0Ω	24Ω	25KΩ	24KΩ	70KΩ	INF.	24Ω	0Ω
6	6L6GA	0Ω	24Ω	25KΩ	24KΩ	70KΩ	INF.	24Ω	0Ω
7	7Y4	24Ω	20KΩ	70KΩ	INF.	INF.	70KΩ	20KΩ	24Ω
8	7Z4	24Ω	INF.	130Ω	INF.	INF.	135Ω	25KΩ	24Ω
9	7Z4	24Ω	INF.	130Ω	INF.	INF.	135Ω	25KΩ	24Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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BELL SOUND
MODEL 3728M

PARTS LIST AND DESCRIPTIONS

BELL SOUND MODEL 3728M
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. 1 Amp.	7B4	7B4	5AC	
2	Mic. 2 Amp.	7B4	7B4	5AC	
3	AF Amp.	7B4	7B4	5AC	
4	AF-Phase Inv.	6SL7GT	6SL7GT	8BD	
5	Power Output	6L6GA	6L6GA	7AC	
6	Power Output	6L6GA	6L6GA	7AC	
7	Bias Rectifier	7Y4	7Y4	5AB	
8	Rectifier	7Z4	7Z4	5AB	
9	"	7Z4	7Z4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10	4	600		TJH6040	TX803	XLXPJ6-4	CR-46	609-4MSB	Filter
11A	20	450		UP6CJ18†			EL-423	AF44J	■ Filter
B	10	450						PRS25-50	▲ "
C	50	25		BR502					Cath. Bypass
12A	20	450		UP6CJ18†			EL-423	AF44J	■ Filter
B	10	450						PRS25-50	▲ "
C	50	25		BR502					Cath. Bypass
13	150	50		UP6CJ33†		DY-80-150	EL-50		Bias Filter
14	2	600		DYR6200		XDMR6-2	BP-206	630-2	Motor Filter
15	.2	600		DYR10025	CB603	XDMR6-.25	BP-256	630-.25	Line Bypass
16	.5	600		DYR10050	CB604	XDMR6-.5	BP-506	630-.5	Hash Filter
17	.015	2000		TVC20S15	QT463	XTIMWPS20-015		2089-015	Buffer
18	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Audio Coupling
19	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	" "
20	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	" "
21	.001	600		DT6D1	TP404	S-6-001	TC-21	684-001	Tone Compensation
22	.006	600		DT6D6	TP409	S-6-006	TC-26	684-006	" "
23	.001	600		DT6D1	TP404	S-6-001	TC-21	684-001	" "
24	.003	600		DT6D3	TP406	S-6-003	TC-23	684-003	" "
25	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Audio Coupling
26	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	" "
27	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	" "
28	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Mic. Coupling
29	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	" "

†Parallel sections for desired capacity.

CONTROLS

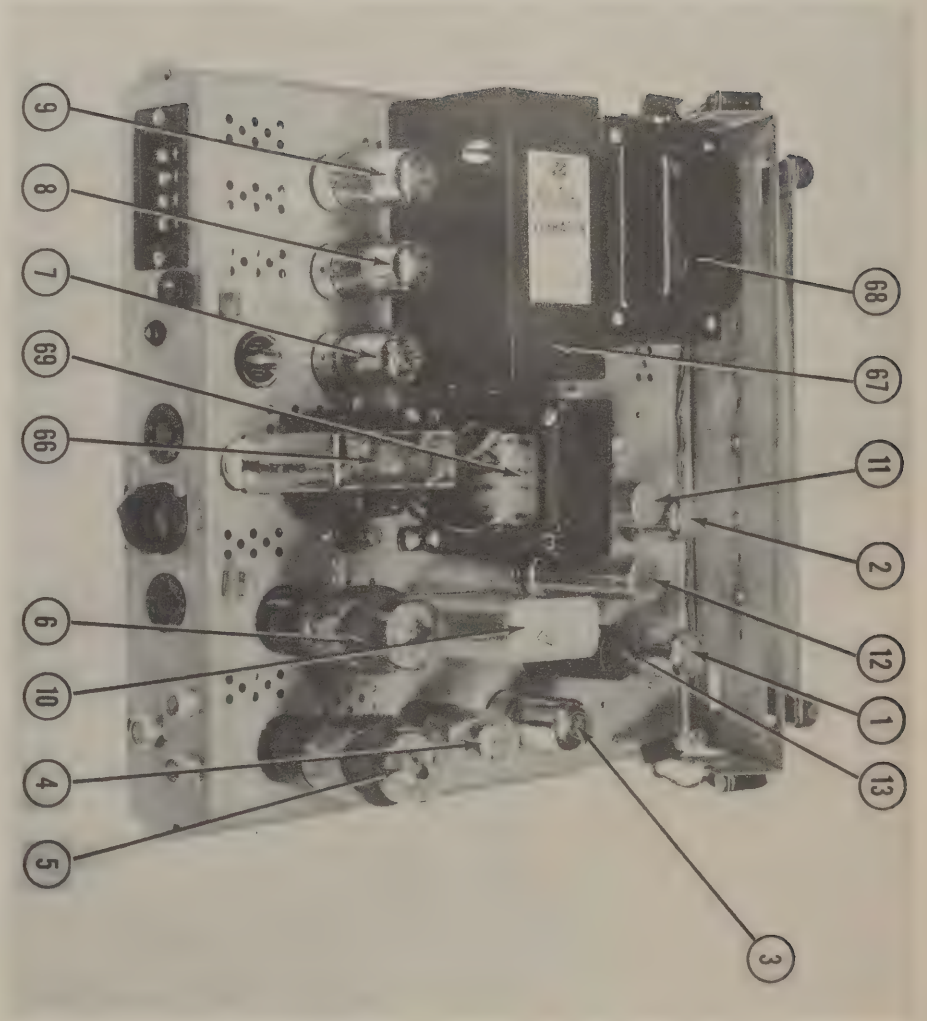
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
30A	1 Meg.	1	B-20066P39	MR53	D13-137	M-63-Z	Mike 1 Control-See Note 1
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 30A per instructions
31A	1 Meg.	1	B-20066P39	MR53	D13-137	M-63-Z	Mike 2 Control-See Note 1
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 31A per instructions
32A	1 Meg.	1	B-20066P39	MR53	D13-137	M-63-Z	Phono Control-See Note 1
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 32A per instructions
33A	1 Meg.	1	B-20066P39	MR53	D13-137	M-63-Z	Bass Control-See Note 1
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 33A per instructions
34A	500KΩ	1		MR48	D13-133	M-60-Z	Treble Control-See Note 1
B	Shaft			Not Req.	A	Not Req.	Attach to 34A per instructions
C	Switch			M27	42	SW-A2	" " " " "

Note 1-Use original pulley on shaft to actuate volume indicator.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
35	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st Mic. Amp. Grid
36	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 2nd Mic. Amp. Grid
37	270KΩ	½		BTS-270K	Red-Vi.-Yl. 1st Mic. Amp. Plate Load
38	270KΩ	½		BTS-270K	Red-Vi.-Yl. 2nd Mic. Amp. Plate Load
39	270KΩ	½		BTS-270K	Red-Vi.-Yl. Isolation
40	270KΩ	½		BTS-270K	Red-Vi.-Yl. Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BELL SOUND PART No.	IRC PART No.	
41	270KΩ	½		BTS-270K	Red-Vi.-Yl. Isolation
42	2700Ω	½		BTS-2700	Red-Vi.-Red AF Cathode
43	270KΩ	½		BTS-270K	Red-Vi.-Yl. AF Plate Load
44	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Filter
45	270KΩ	½		BTS-270K	Red-Vi.-Yl. Tone Compensation
46	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Tone Compensation
47	560Ω	½		BTS-560	Grn.-Blue-Br. Driver Cathode
48	100KΩ	1		BTA-100K	Br.-Blk.-Yl. Driver Plate Load
49	100KΩ	1		BTA-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
50	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Phase Inverter Grid
51	15KΩ	½		BTS-15K	Br.-Grn.-Or. Phase Inv. Grid
52	56KΩ	½		BTS-56K	Grn.-Blue-Or. Output Grid
53	56KΩ	½		BTS-56K	Grn.-Blue-Or. Output Grid
54	2500Ω	10		AB-2500	Bleeder
55	25KΩ	10		AB-25K	"
56	24KΩ	½		BTS-22K	Red-Yl.-Or. Bias Network
57	10KΩ	½		BTS-10K	Br.-Blk.-Or. Bias Network
58	39KΩ	1		BTA-39K	Or.-White-Or. Bias Network
59	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Hum Balance
60	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Hum Balance
61	22KΩ	1		BTA-22K	Red-Red-Or. Rectifier Ballast
62	100Ω	1		BW-1-100	Br.-Blk.-Br. Hash Suppression
63	100Ω	1		BW-1-100	Br.-Blk.-Br. Hash Suppression
64	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Series Phono-See Note 2

Note 2 - Not used in all models.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	BELL SOUND PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	NOTES
65	.150A	90Ω	5 Henries	B-20055	C-2309*		C-2993	*Drill new mounting holes.
66	.007A	500Ω	9 Henries	B-20058	C-1707	T20C52	C-2975	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				BELL SOUND PART No.	MALLORY PART No.	RADIART PART No.	
67	Interrupter	6.3	60∿				

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI. 1	SEC. 1	SEC. 2	SEC. 3	BELL SOUND PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	INSTALLATION NOTES
68	117V AC @ 1.2A PRI. 2 5.4V DC @ 12A	800V CT @ .148A	5.9V AC @ 5.7A		B-2088-A		T22R24*		*Drill new mounting holes.

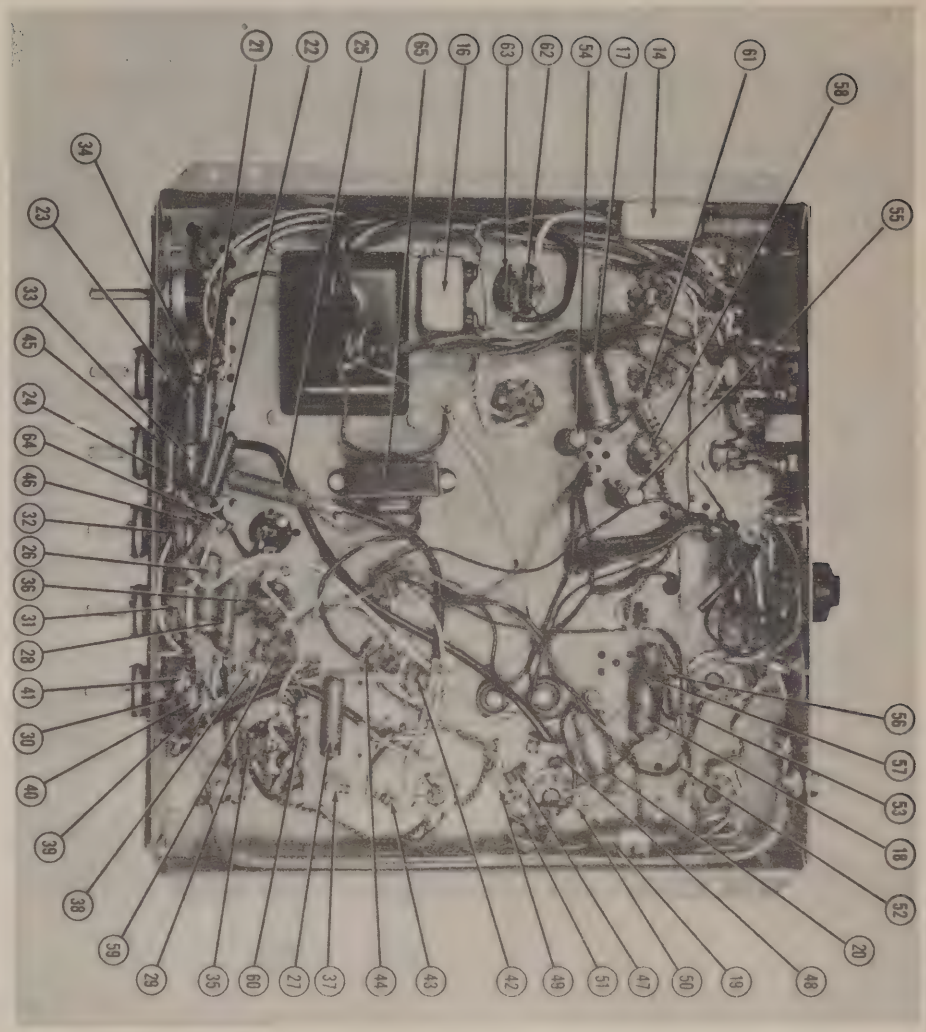
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELL SOUND PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
69	6600Ω CT	2.5Ω 4Ω 8Ω 16Ω 250Ω 500Ω	330Ω CT	.2Ω .3Ω .4Ω .6Ω 11Ω 17.5Ω	B-20061	A-3801$	T22S68	A-3130$	$Drill new mounting holes.

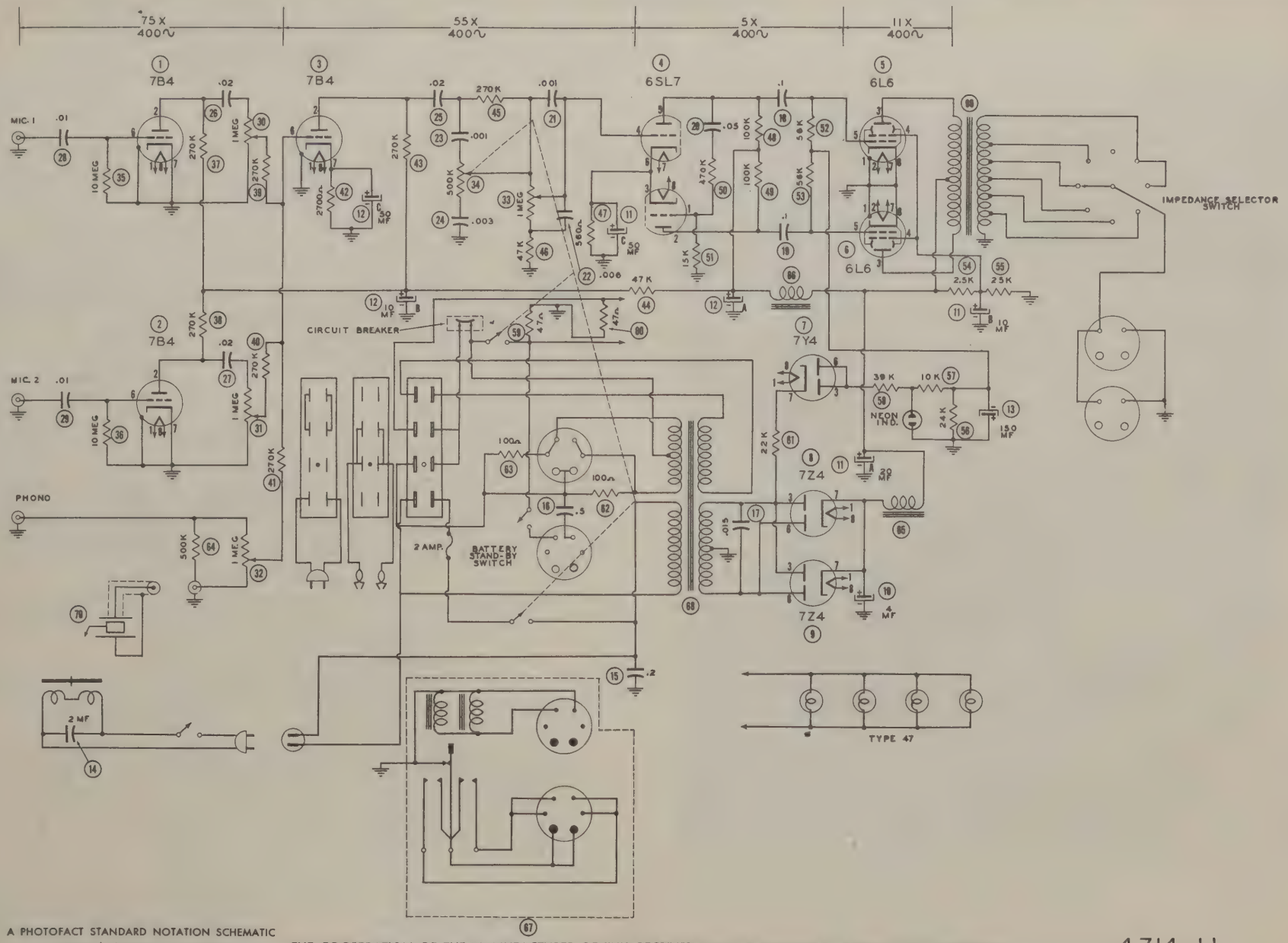
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	BELL SOUND PART No.	ASTATIC PART No.	
70		B-2	

CHASSIS—BOTTOM VIEW



DATE 9/47
SET 24 FOLDER #4714-11
BELL SOUND MODEL 372BM
BATTERY OPERATED
BELL SOUND MODEL 372BM
BATTERY OPERATED



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THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

BELMONT
MODEL 6D120

BELMONT
MODEL 6D120

BELMONT MODEL 6D120

TRADE NAME	Belmont, Model 6D120
MANUFACTURER	Belmont Radio Corp., 5921 W. Dickens Ave., Chicago, Ill.
TYPE SET	AC DC Superheterodyne - Self Contained Loop Antenna - 6 Pushbutton Automatic Tuning
TUBES (SIX)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	530-1650KC RATING .235 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to pin #8 (signal grid) of 12SA7. Low side to B-.	455KC	Plates out of mesh. High freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	"	1650KC	"	"	A5	"
3	200MMFD	High side to ext. ant. clip. Low side to B-.	1400KC	Tune in 1400 KC signal.	"	A6	Adjust for maximum output.

PUSHBUTTON ADJUSTMENTS

The pushbuttons may be used, after proper adjustment, for the automatic tuning of any six stations selected. They may be set up in any order.
1 - Turn on the radio and allow it time to warm up.
2 - From the call letter sheets supplied with radio press out call letters of six selected stations and insert them in any sequence in the rectangular opening in each pushbutton. Press in acetate tab into each pushbutton.
3 - Loosen locking screw in center of tuning knob by turning it counterclockwise.
4 - Press the first pushbutton down all the way. Hold it down firmly and turn the tuning knob to the station selected for that pushbutton. Tune the station in carefully and then release pushbutton.
5 - Follow the above procedure for each of the other five buttons, adjusting each to station selected.
6 - Rotate tuning knob as far clockwise as it will go. Tighten locking screw in center of tuning control knob very firmly.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

MODEL D...

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELMONT PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	11994	UP4CJ1	FP354	DY-8x20-150	EL-224	AF844D	■ Filter
B	20	150							▲ "
C	20	150							"
8	.1	400	C-8D-10760	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Filter
9	.02	400	C-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-.02	35L6 Plate Bypass
10	.004	600	C-8D-10788	DT6D4	TP407	S-6-004	TC-24	684-004	Audio Coupling
11	.2	400	C-8D-10942	DT4P2	TP426	S-4-2	TC-3	484-.2	Line Isolating
12	.002	600	C-8D-10778	DT6D2	TP405	S-6-002	TC-22	684-002	Audio Coupling
13	.05	200	C-8D-10770	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
14	.25	200	C-8D-10775	DT4P25	TP430	S-4-25	TC-2	484-.25	RF Bypass Pwr. Supp.
15	.02	400	C-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-.02	AVC Filter
16	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	Ant. Series Tuned
17	100	500	C-8F3-6	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Audio Plate Bypass
18	47	500	C-8F3-6	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	RF Bypass Vol. Cont.
19	100	500	C-8F3-6	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Bypass Diode
20	100	500	C-8F3-6	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Cond.
21	100	500	C-8F3-6	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Coupling
22	120	500	C-8F6-114	5W5T15	MC236	MO.5-315	1FM-315	1468-00015	Ant. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	1 Meg.	1	101193	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 23A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

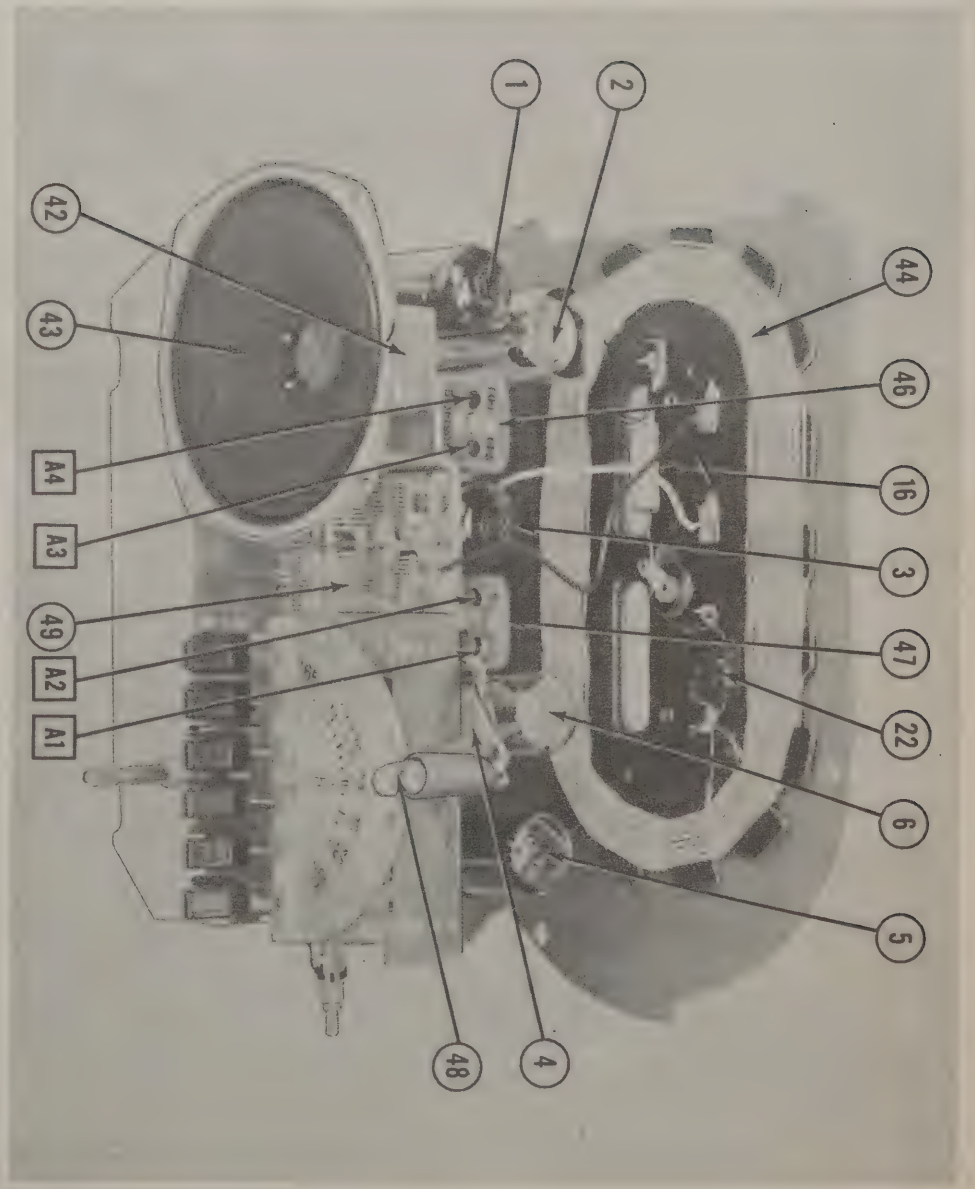
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	IRC PART No.	IDENTIFICATION CODES
24	150KΩ	½	C-9B1-26	BTS-150K	Br.-Grn.-Yl. AVC Network
25	100Ω	½	C-9B1-50	BW-½-100	Br.-Blk.-Br. RF Cathode
26	150KΩ	½	C-9B1-26	BTS-150K	Br.-Grn.-Yl. Line Isolating
27	5000Ω	½	C-9B1-70	BTS-4700	Grn.-Blk.-Red RF Plate Load
28	100KΩ	½	C-9B1-25	BTS-100K	Br.-Blk.-Yl. Converter Grid
29	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or. Osc. Grid
30	22Ω	½	C-9B1-42	BW-½-22	Red-Red-Blk. Rectifier Ballast
31	200Ω	1	C-9B2-54	BW-1-220	Red-Blk.-Br. Filter
32	1200Ω	1	C-9B2-63	BW-1-1200	Br.-Red-Red "
33	150Ω	½	C-9B1-52	BW-½-150	Br.-Grn.-Br. IF Cathode
34	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
35	47KΩ	½	C-9B1-23	BTS-47K	Yl.-Vi.-Or. Diode Load
36	4.7 Meg.	½	C-9B1-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
37	220KΩ	½	C-9B1-27	BTS-220K	Red-Red-Yl. 1st AF Plate Load
38	150Ω	½	C-9B1-52	BW-½-150	Br.-Grn.-Br. Output Cathode
39	470KΩ	½	C-9B1-29	BTS-470K	Yl.-Vi.-Yl. Output Grid
40	33Ω	1	C-9B2-44	BW-1-33	Or.-Or.-Blk. Line Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BELMONT PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
41	3500Ω	3.2Ω	310Ω	.66Ω	10595	A-3876	T22845#	A2930	#Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA BELMONT PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-113†		†Fabricate new mounting bracket.
42	PM	3.2Ω	114191	Mod. P4-X		
	CONE DIA.	VC DIA.				
43	4½"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

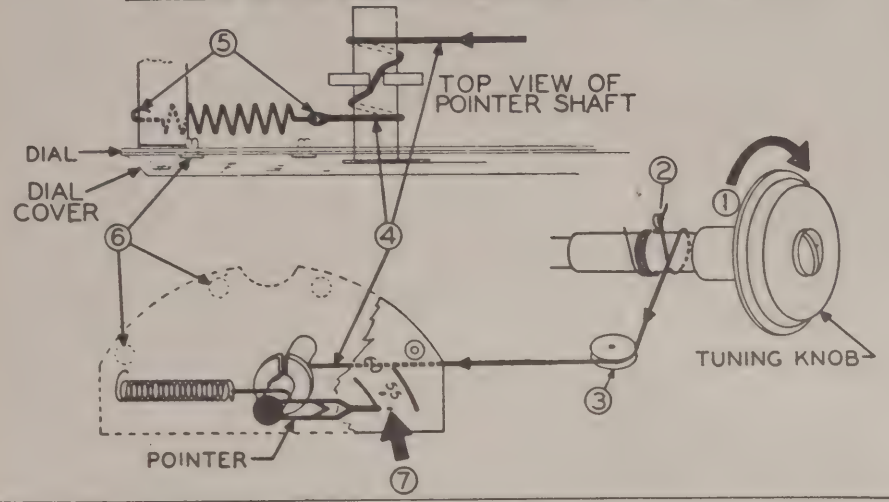
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA BELMONT PART No.	REPLACEMENT DATA MEISSNER PART No.	
44	Loop Ant. Assy.	30Ω	.85Ω	B212-11062		Specify brown or ivory back
45	Osc. Coil	1Ω	2.8Ω	A-13D-10215		
46	Input IF	30.5Ω	31Ω	108140G	16-6658	
47	Output IF	23.5Ω	25Ω	108145C	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA BELMONT PART No.		INSTALLATION NOTES
48	Bayonet	6-8	0.15	Brown	107249		Type 47

MISCELLANEOUS

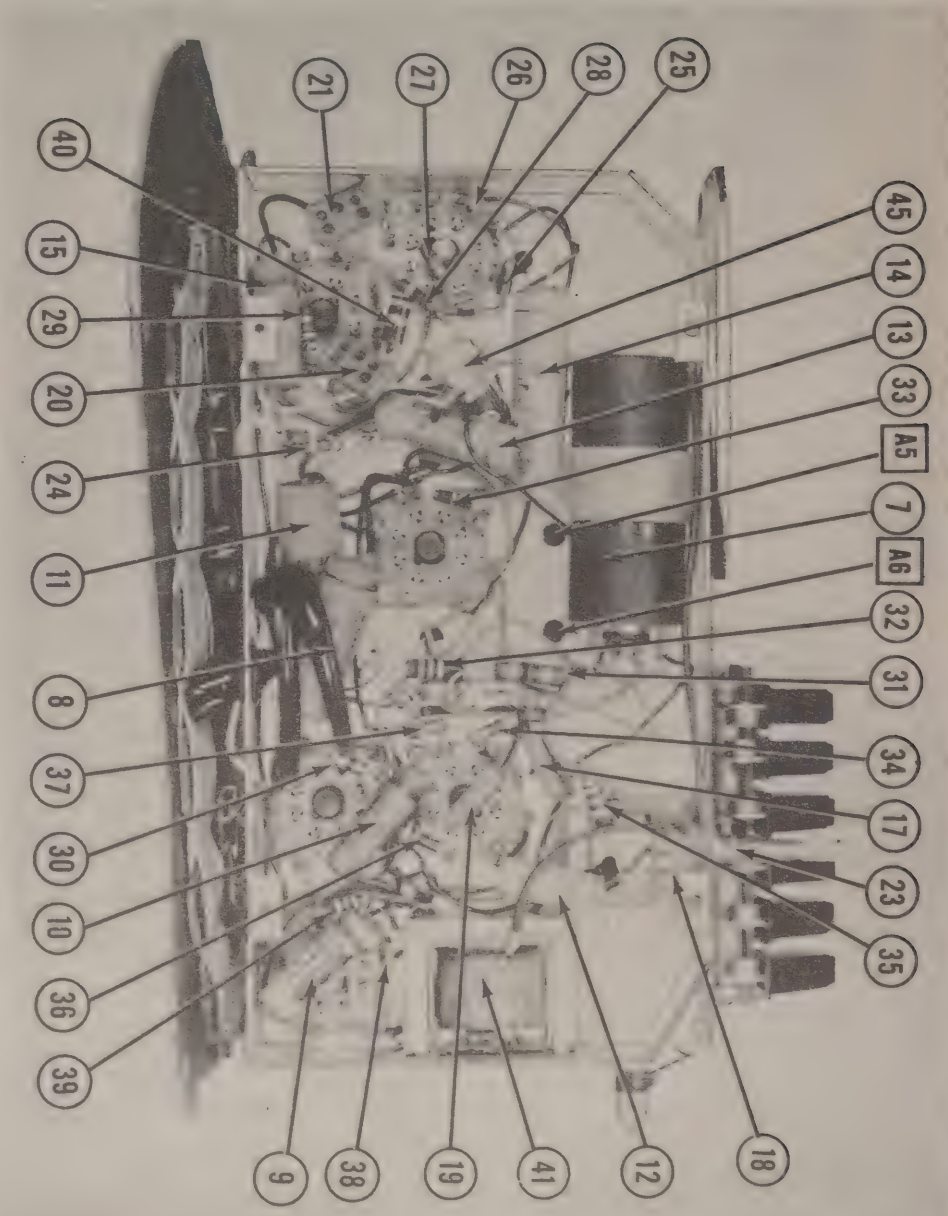
ITEM No.	PART NAME	BELMONT PART No.	NOTES
49	Tuning Cap.	B-8A-10211	2 Gang Variable with Trimmers A5, A6

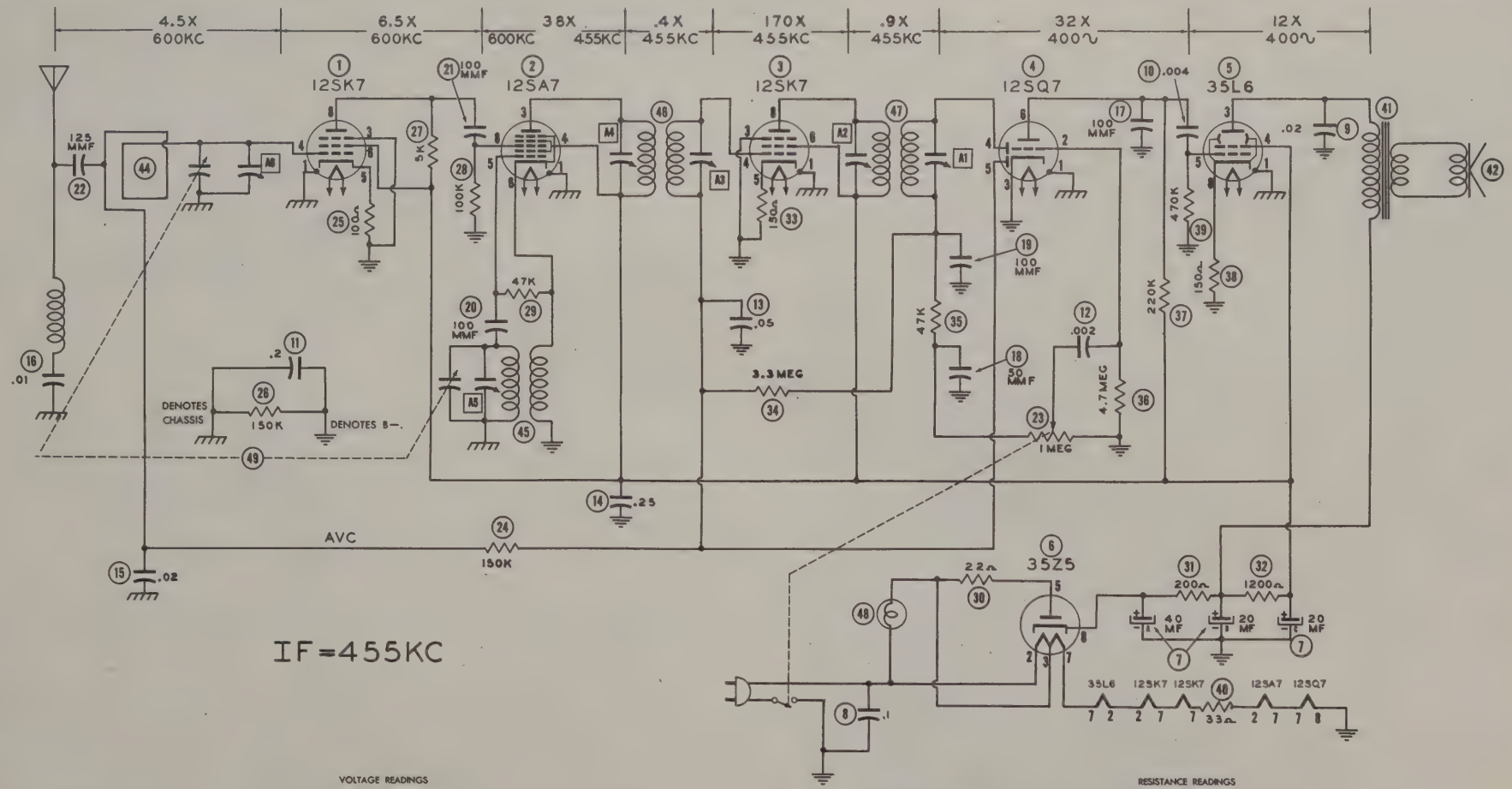


REPLACING DIAL POINTER DRIVE CORD

Six inches of cord are required. Numbers below correspond to circled numbers in diagram.
1 - Rotate tuning knob to extreme clockwise position.
2 - Tie cord to loop in spring as shown.
3 - Pass cord over idler pulley.
4 - Pass cord over pointer shaft; wind it one turn around shaft; pass it through key washer, then once more around shaft.
5 - Hook spring over end of dial support. Tie cord to spring. IMPORTANT: Full contraction of spring must rotate pointer shaft at least one half turn.
6 - Remove dial crystal by removing snap-in rivets.
7 - Make sure tuning knob is in extreme clockwise position. Then rotate pointer clockwise, against friction of shaft, until it is in a horizontal position, as shown.

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0V.	41VAC	0V.	-.14VDC	.9VDC	75VDC	28VAC	47VDC
2	12SA7	0V.	22VAC	75VDC	75VDC	-5VDC§	0V.	11VAC	0V.
3	12SK7	0V.	53VAC	0V.	-.5VDC	1.25VDC	75VDC	41VAC	75VDC
4	12SQ7	0V.	-.5VDC	0V.	-.54VDC	-.5VDC	56VDC	11VAC	0V.
5	35L6GT	0V.	53VAC	97VDC	75VDC	0V.	0V.	85VAC	4.9VDC
6	35Z5GT	0V.	117VAC	113VAC	0V.	112VAC	0V.	85VAC	118VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	140KΩ	75Ω	0Ω	5 Meg.	105Ω	90KΩ	62Ω	95KΩ
2	12SA7	140KΩ	27Ω	90KΩ	90KΩ	47KΩ	1Ω	14Ω	100KΩ
3	12SK7	140KΩ	88Ω	0Ω	4.7 Meg.	150Ω	90KΩ	75Ω	90KΩ
4	12SQ7	140KΩ	4.7 Meg.	0Ω	1.1 Meg.	4.7 Meg.	310KΩ	14Ω	0Ω
5	35L6GT	140KΩ	88Ω	90KΩ	90KΩ	470KΩ	0Ω	118Ω	150Ω
6	35Z5GT	INF.	160Ω	155Ω	0Ω	175Ω	0Ω	118Ω	90KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

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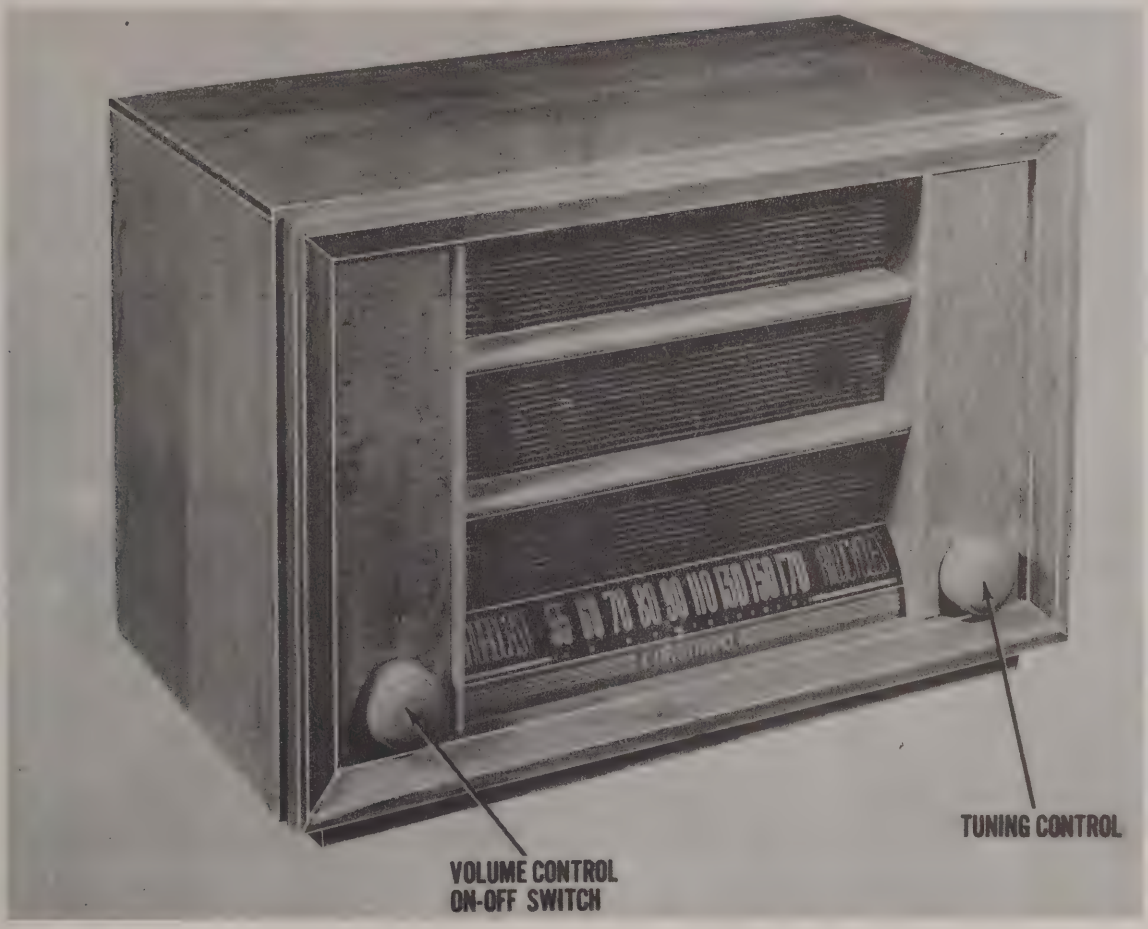
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4714-12

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CORONADO MODEL
43-8420



CORONADO MODEL
43-8420

CORONADO MODEL 43-8420

TRADE NAME	Coronado Model 43-8420
SUPPLIER	"Coronado" Minneapolis, Minn. - Los Angeles, Calif.
TYPE SET	AC-DC Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1700KC RATING .230 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning capacitor. Low side to B-.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200 MMF.	High side to ext. ant. terminal.	1700KC	"	"	A5	Adjust for maximum output.
3	200 MMF.	"	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

CORONADO
MODEL 43-8420

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CORONADO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	30	150		BRD3315	2N513	DSB-2x30-150	TA-330	PRSA150-30-30	Filter - Yellow
B	30	150							" - Red
7	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	Line Filter
8	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Output Plate Bypass
9	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Audio Coupling
10	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	" "
11	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	RF Bypass Pwr. Supply
12	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Line Isolation
13	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	AVC Filter
14	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Tuning Capacitor Iso.
15	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Ext. Ant. Coupling
16	220	500		5W5T2	MC237	MO.5-322	1FM-32	1468-0002	AF Plate Bypass
17	220	500		5W5T2	MC237	MO.5-322	1FM-32	1468-0002	RF Bypass Vol. Cont.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
18A	500KΩ	1		MR48	D13-133	AM-60-Z	Volume Control
B	Shaft			Not Req.	F	RS-3	Attach to 18A per instruction
C	Switch			M26	41	SW-A	" " " " "

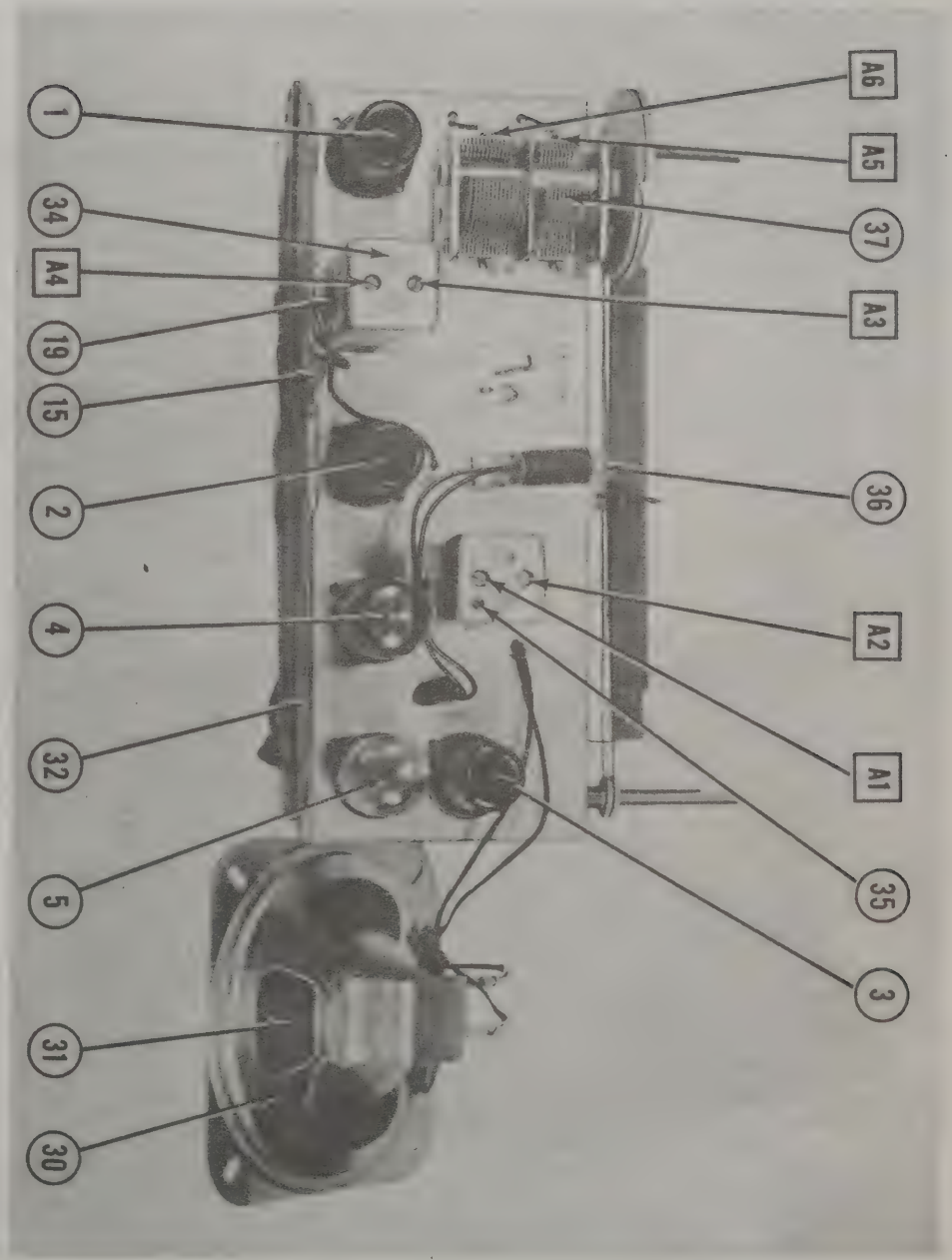
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	
19	470Ω	½		BTS-470	Yl.-Vl.-Br. Series Antenna
20	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
21	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. Line Isolation
22	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
23	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vl.-Grn. AF Grid
24	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. AF Plate Load
25	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. Output Grid
26	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
27	2700Ω	2		BT-2-2700	Red-Vl.-Red Filter
28	18Ω	½		BW-½-18	Br.-Gray-Blk. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
29	3000Ω	3.8Ω	150Ω	.4Ω		A-3876	T22545	A-2928*	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CORONADO PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-108		
30	PM	3.8Ω		Mod. P6-X		
	CONE DIA.	VC DIA.				
31	5-1/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

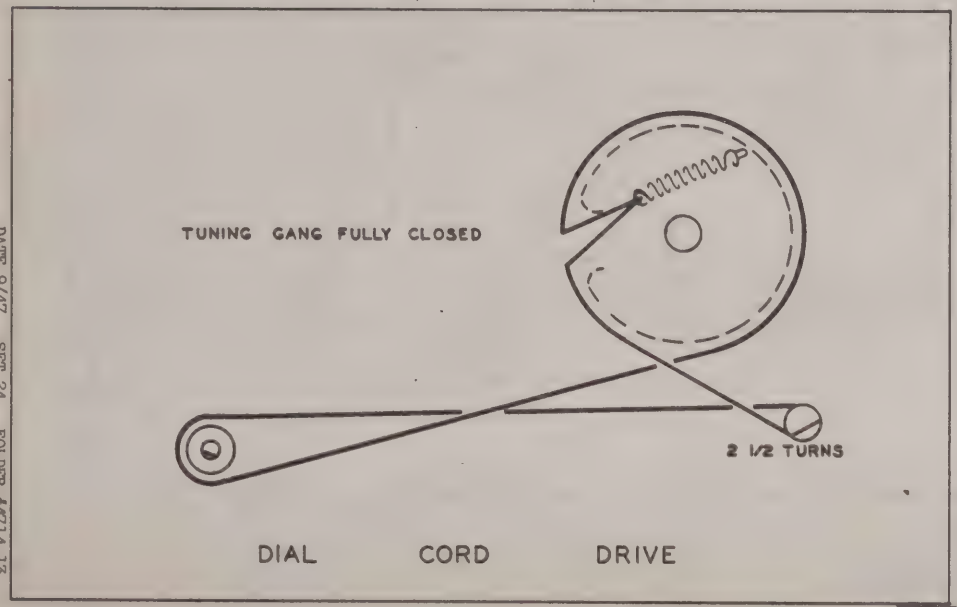
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	
32	Loop Ant.	0Ω	1Ω			
33	Osc. Coil		10Ω		14-1040	
34	Input IF	18Ω	19Ω		16-6658	
35	Output IF	30Ω	30Ω		16-6660	

DIAL LIGHT

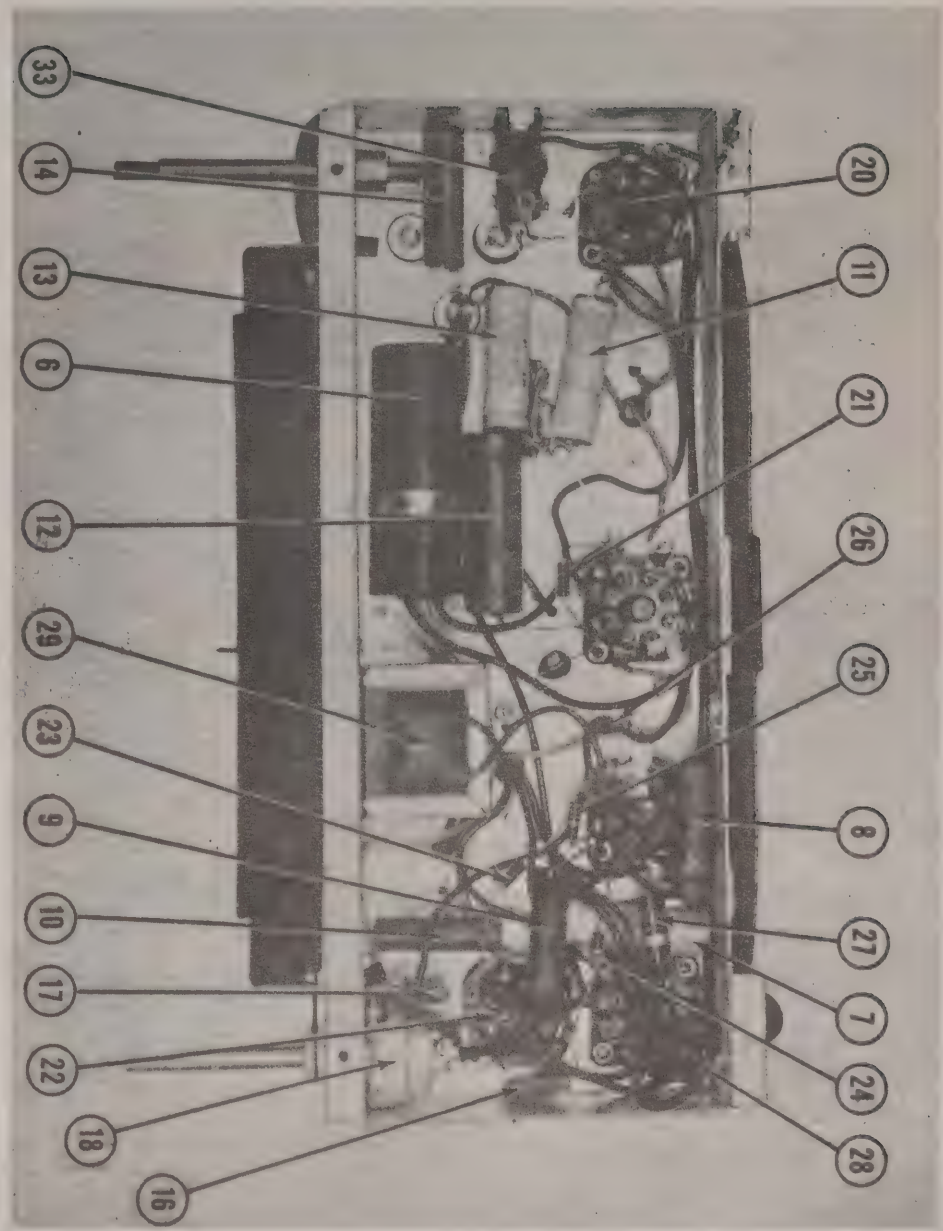
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CORONADO PART No.		
36	Bayonet	7.5	0.2	White			Type 51

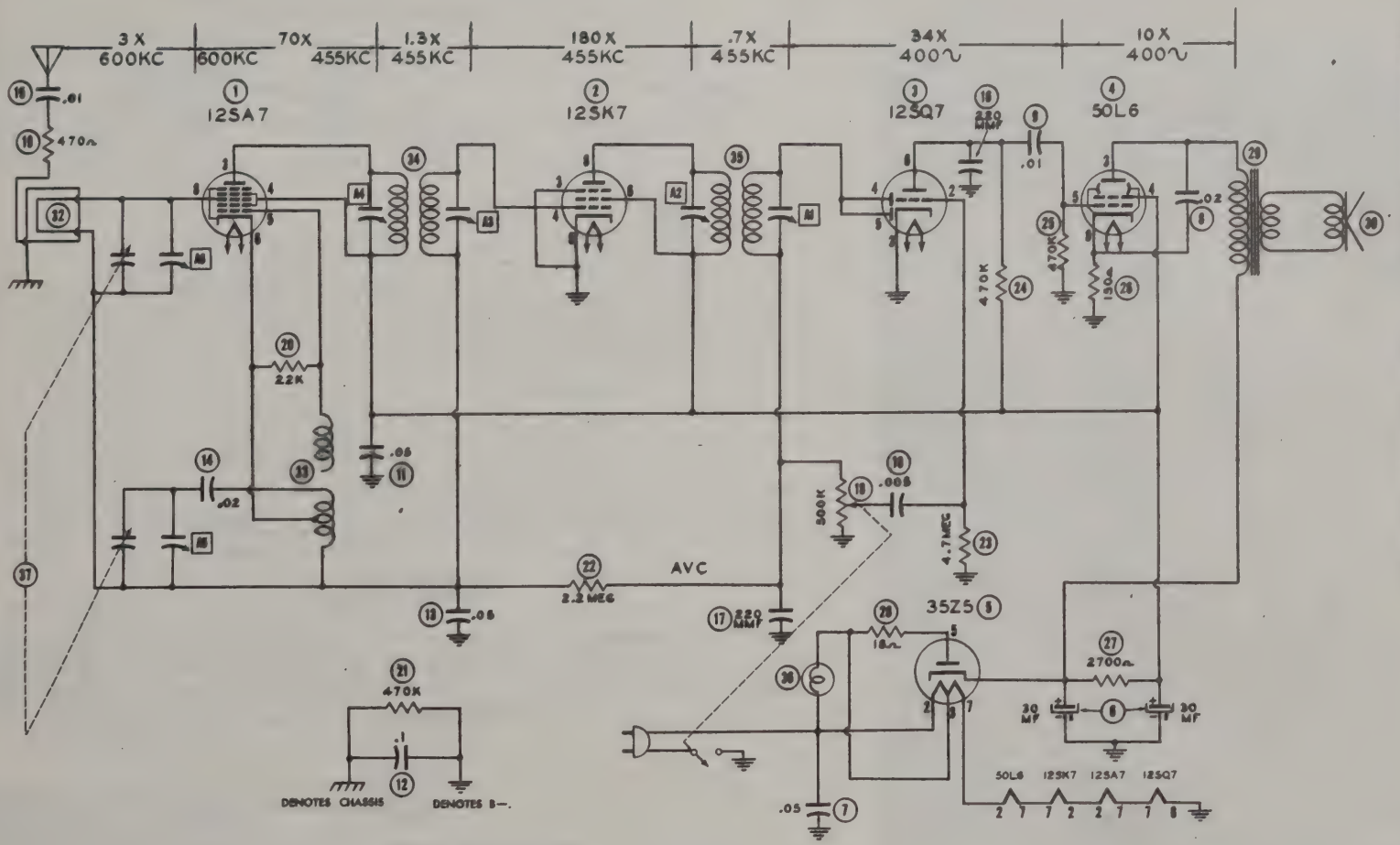
MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
37	Tuning Cap.		17-428 MMF, 26-191 MMF



CHASSIS—BOTTOM VIEW





IF=455KC

Pin No.	12SA7 Volt.	12SA7 Res.	12SK7 Volt.	12SK7 Res.
1	0V.	470K	0V.	470K
2	25VAC	25Ω	25VAC	25Ω
3	72VDC	1.5 Meg.	0V.	0Ω
4	72VDC	1.5 Meg.	-.3VDC	2.5 Meg.
5	-5VDC§	25K	0V.	0Ω
6	0V.	.5Ω	72VDC	1.5 Meg.
7	12VAC	13Ω	37VAC	36Ω
8	-.3VDC	2.5 Meg.	72VDC	1.5 Meg.

Pin No.	12SQ7 Volt.	12SQ7 Res.	50L6GT Volt.	50L6GT Res.
1	0V.	470K	0V.	INF.
2	-.6VDC	5 Meg.	88VAC	88Ω
3	0V.	0Ω	117VDC	1.5 Meg.
4	-.6VDC	450K	72VDC	1.5 Meg.
5	-.6VDC	450K	0V.	460K
6	37VDC	2 Meg.	0V.	0Ω
7	12VAC	13Ω	37VAC	36Ω
8	0V.	0Ω	4.5VDC	150Ω

Pin No.	35Z5GT Volt.	35Z5GT Res.
1	0V.	INF.
2	117VAC	115Ω
3	114VAC	113Ω
4	0V.	INF.
5	113VAC	130Ω
6	-.6VDC	2.5 Meg.
7	88VAC	88Ω
8	122VDC	1.5 Meg.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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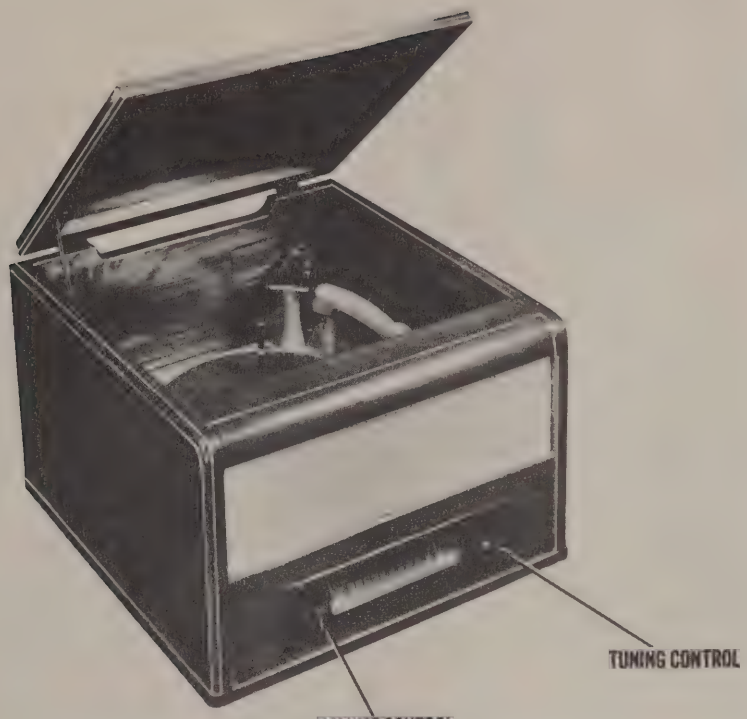
4714-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CORONADO MODEL
43-9201



CORONADO MODEL
43-9201

CORONADO MODEL 43-9201

TRADE NAME	Coronado, Model 43-9201
SUPPLIER	"Coronado" - Los Angeles, Calif., Minneapolis, Minn.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne Receiver
TUBES (FIVE)	Types, 12BE6 Converter, 12BD6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1720KC RATING .235 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver, for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 7 (grid) 12BE6. Low side to B-.	455KC	Tuning slugs out completely	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	High side to ext. ant. lead.	1720KC	"	"	A5	Adjust for maximum output.
3	200MMFD	High side to ext. ant. lead.	1720KC	"	"	A6	" " " "
4	200MMFD	"	1400KC	Tune for maximum output.	"	Ant.Coil (40)	Adjust position of coil for maximum output. Repeat Steps 3 and 4 until no further improvement can be made.
5	200MMFD	"	1500KC	"			Set pointer at 1500KC.

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PARTS LIST AND DESCRIPTIONS

CORONADO MODEL A3-4201

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BD6	12BD6	7CC	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5AQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CORONADO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	40	150	A-8C-10077	UP8CJ44	FP357	DY-3x40-150	EL-224	AF844D	■ Filter
B	20	150							▲ "
C	20	150							" "
7	.1	400	C-8D-10760	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Filter
8	.09	400	C-8D-11251	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
9	.02	400	C-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
10	.006	600	C-8D-10785	DT6D6	TP409	S-6-006	TC-26	684-006	Audio Coupling
11	.002	600	C-8D-10789	DT6D5	TP405	S-6-002	TC-22	684-002	" "
12	.2	400	C-8D-10942	DT4P2	TP429	S-4-2	TC-2	484-.2	RF Bypass Pwr. Supp.
13	.05	200	C-8D-10770	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
14	270	500	C-8F3-118	5W5T3	MC241	MO.5-33	1FM-33	1468-0003	Audio Plate Bypass
15	100	500	C-8F3-113	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
16	100	500	C-8F3-113	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Capacitor
17	820	500	C-8F3-247						Fixed Padder
18	330	500	C-8F3-119	5W5T35	MC243	MO.5-333	1FM-35	1468-00035	RF Coupling
19	100	500	C-8F3-113	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Ext. Ant. Coupling

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
20A	500KΩ	1	A-10A-10720	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 20A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

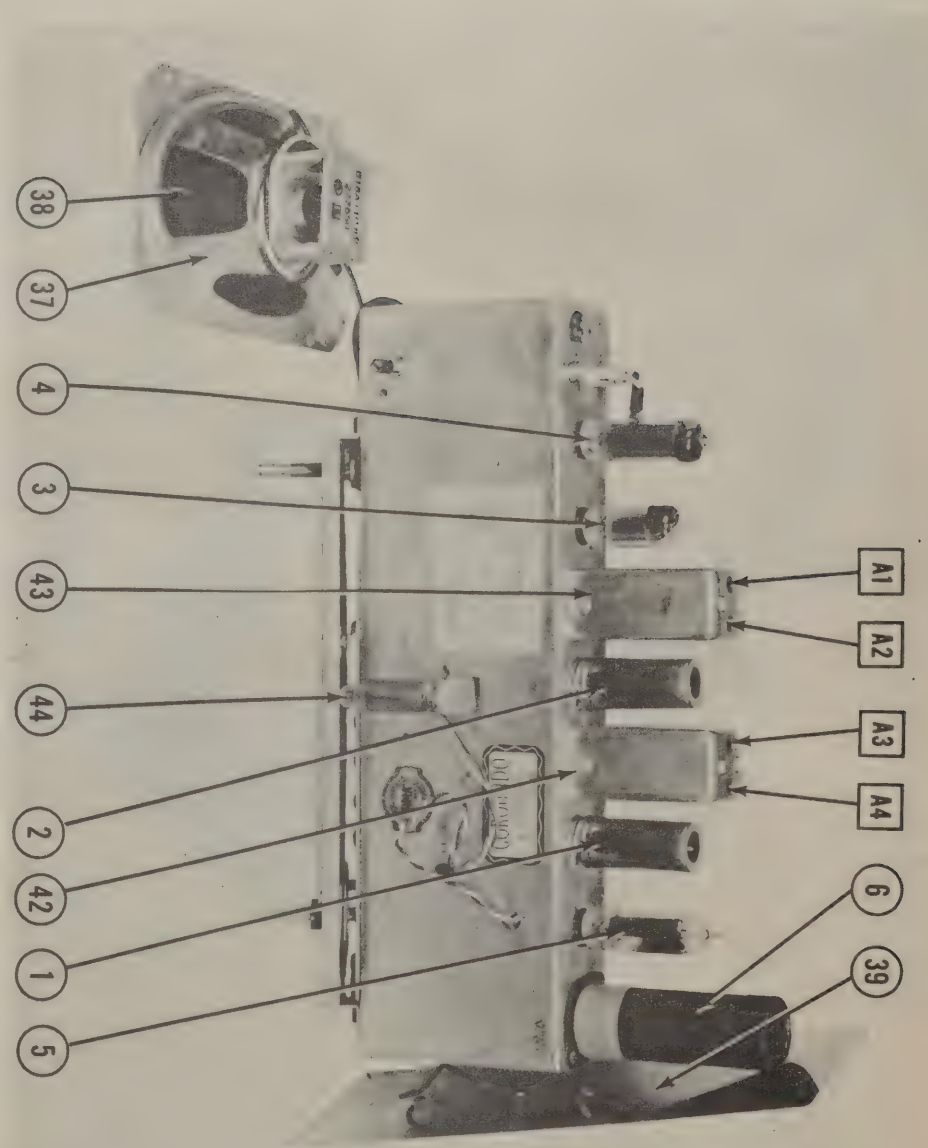
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	
21	22KΩ	½	C-9B1-78	BTS-22K	Red-Red-Or. Oscillator Grid
22	220KΩ	½	C-9B1-90	BTS-220K	Red-Red-Yl. Converter Grid
23	68Ω	½	C-9B1-60	BTS-680	Blue-Gray-Br. Oscillator Coil Shunt
24	560KΩ	½	C-9B1-95	BTS-560K	Grn.-Blue-Yl. Series Phono
25	100Ω	½	C-9B1-50	BW-½-100	Br.-Blk.-Br. IF Cathode
26	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or. Series Volume Control
27	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
28	15 Meg.	½	C-9B1-302	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
29	220KΩ	½	C-9B1-90	BTS-220K	Red-Red-Yl. AF Plate Load
30	560KΩ	½	C-9B1-95	BTS-560K	Grn.-Blue-Yl. Output Grid
31	150Ω	½	C-9B1-52	BW-½-150	Br.-Grn.-Br. Output Cathode
32	1200Ω	1	C-9B2-63	BW-1-1200	Br.-Red-Red Filter
33	220Ω	1	C-9B2-54	BW-1-220	Red-Red-Br. "
34	27Ω	½	C-9B1-43	BW-½-27	Red-Vi.-Blk. Surge Limiter
35	33Ω	1	C-9B2-44	BW-1-33	Or.-Or.-Blk. Line Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
36	2100Ω	3.7Ω	1.0Ω	.7Ω	B-12C-10074-1	A-8876	T22S45	A2C28	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: CORONADO PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
37	PM	3.7Ω	B-18A-11089			
	CONE DIA.	VC DIA.				
38	3-7/8" x 6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: CORONADO PART No.	MEISSNER PART No.	
39	Ant. Plate			B-2E-12192		
40	Ant. Coil		9Ω			Item 40 & 41 are slug tuned, ganged together and are part of the tuning assy.
41	Osc. Coil	1.5Ω	6.5Ω			
42	Input IF	25Ω	37Ω	B-13A-10728	16-6666	
43	Output IF	25Ω	25Ω	B-13B-10729	16-6667	

DIAL LIGHT

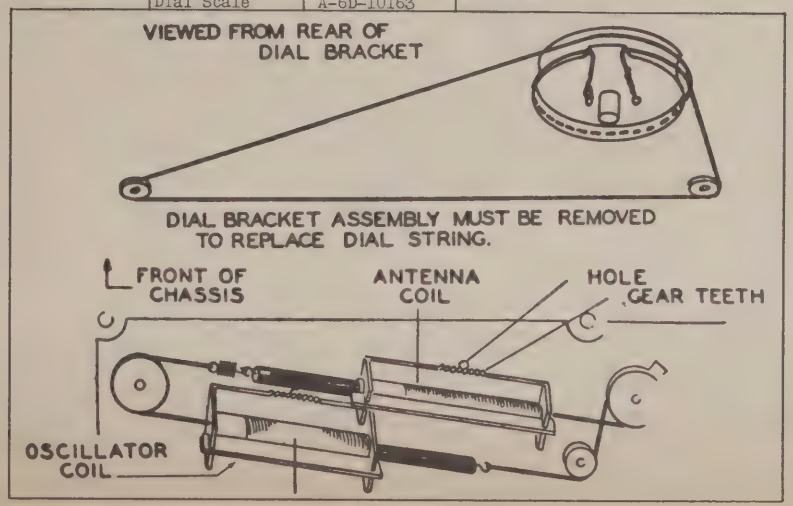
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: CORONADO PART No.		INSTALLATION NOTES
44	Bayonet	6-8	0.15	Brown	A-46A-10793		Type 47

PHONO CARTRIDGE

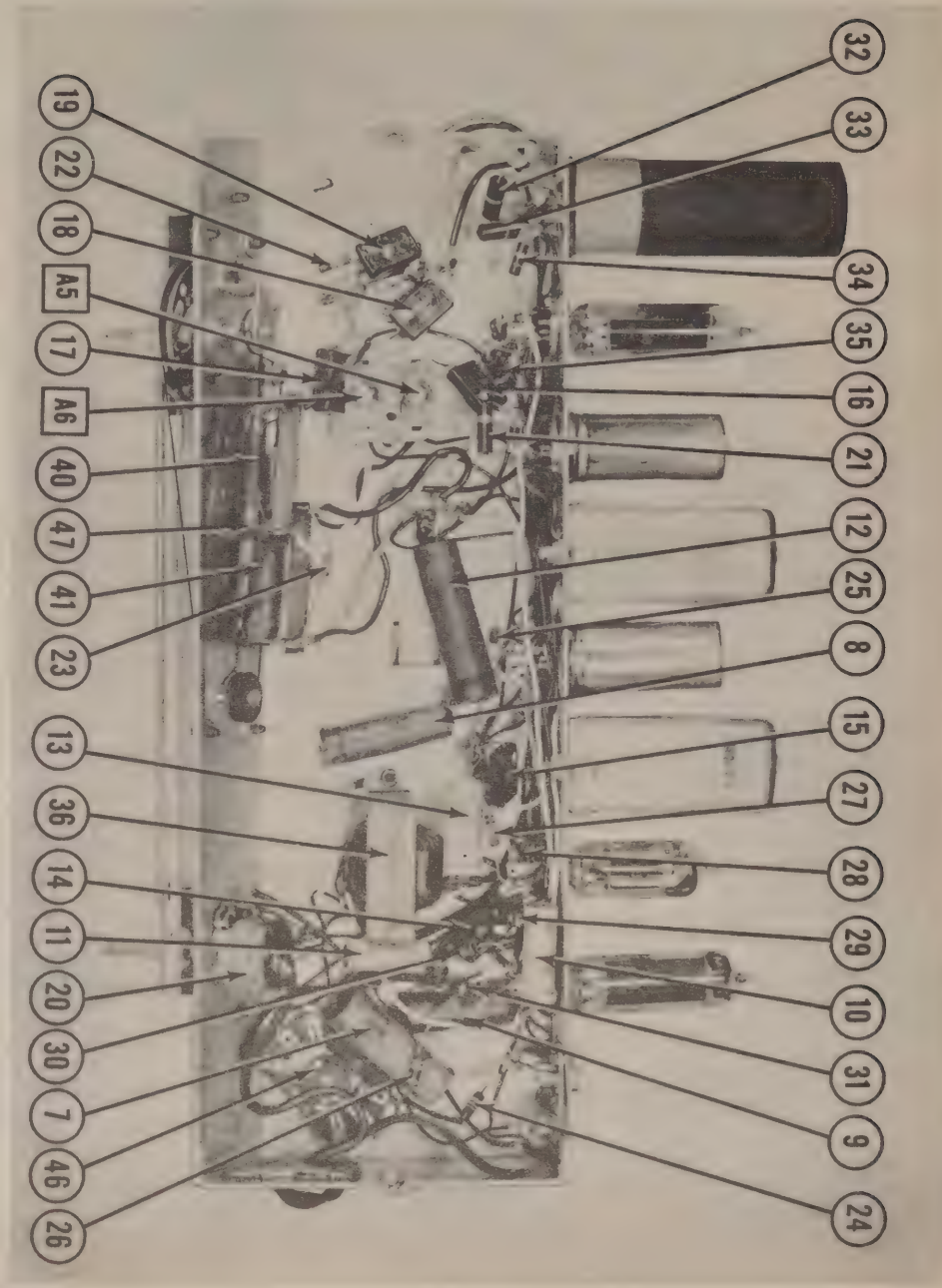
ITEM No.	REPLACEMENT DATA: CORONADO PART No.	ASTATIC PART No.	REMARKS
45		L-70-S	

MISCELLANEOUS

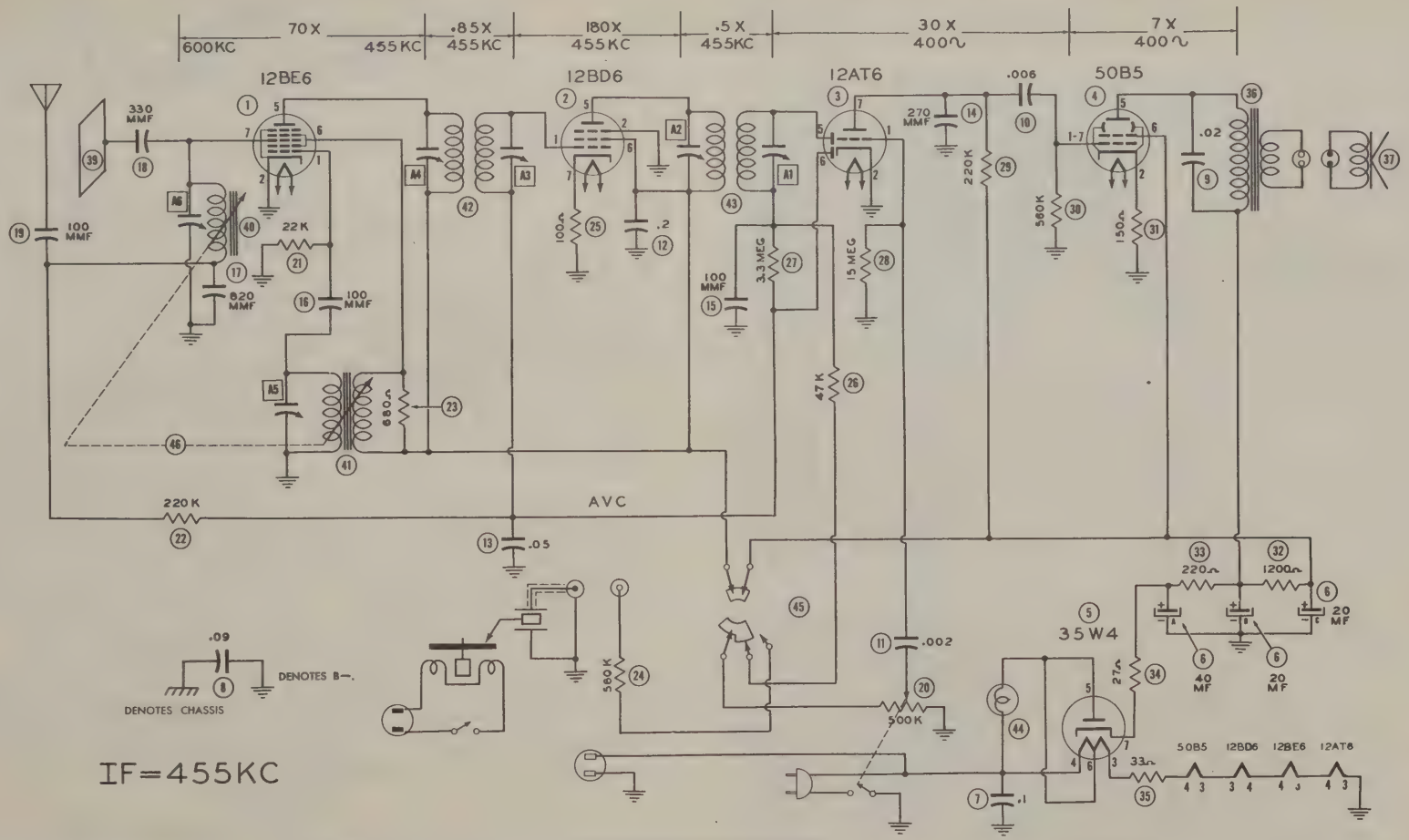
ITEM No.	PART NAME	CORONADO PART No.	NOTES
46	Switch	A-20A-10722	Radio-Phono
47	Tuner Unit	C-211-10171	
A5	Trimmer	A-8E-10723	Osc. Adj.
A6	Trimmer	A-8E-10723	Ant. Adj.
	Dial Scale	A-6D-10163	



CHASSIS—BOTTOM VIEW



CORONADO MODEL 43-9201



RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-5VDC§	0V.	11VAC	23VAC	77VDC	77VDC	-.3VDC
2	12BD6	-.6VDC	0V.	34VAC	23VAC	77VDC	77VDC	.9VDC
3	12AT6	-.6VDC	0V.	0V.	11VAC	-.5VDC	-.5VDC	44VDC
4	50B5	0V.	4.9VDC	34VAC	75VAC	90VDC	77VDC	0V.
5	35W4	0V.	75VDC	80VAC	117VAC	106VAC	106VAC	108VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	22KΩ	0Ω	1Ω	23Ω	50KΩ	50KΩ	4 Meg.
2	12BD6	4 Meg.	0Ω	34Ω	23Ω	50KΩ	50KΩ	100Ω
3	12AT6	12 Meg.	0Ω	0Ω	12Ω	500KΩ	4 Meg.	270KΩ
4	50B5	600KΩ	150Ω	34Ω	92Ω	50KΩ	50KΩ	600KΩ
5	35W4	INF.	92Ω	118Ω	150Ω	145Ω	145Ω	50KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

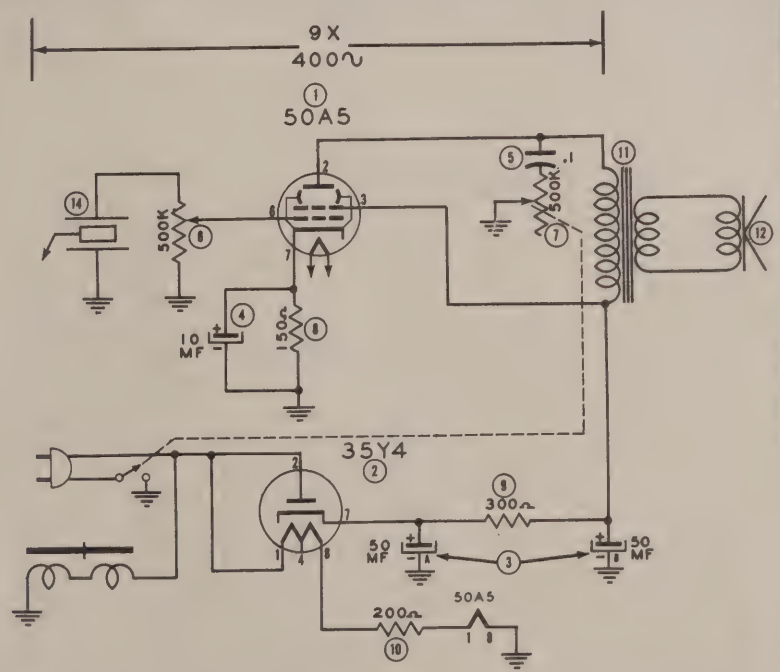
4714-14

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

DECCA MODEL DP-11

TRADE NAME	Decca, Model DP-11
MANUFACTURER	Steelman Radio Corp., 742 E. Tremont Ave., Bronx 57, N.Y.
TYPE SET	AC Operated Phonograph with 2 Tube Amplifier and Speaker
TUBES (TWO)	Types, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .240 Amp. @ 117 Volts AC



Pin No.	50A5 Volt.	Res.
1	50VAC	52Ω
2	110VDC	40KΩ
3	115VDC	40KΩ
4	0V.	INF
5	0V.	INF
6	0V.	480KΩ
7	7.5VDC	150Ω
8	0V.	0Ω

Pin No.	35Y4 Volt.	Res.
1	117VAC	280Ω
2	117VAC	280Ω
3	0V.	INF
4	110VAC	270Ω
5	0V.	INF
6	0V.	INF
7	127VDC	40KΩ
8	82VAC	250Ω

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4714-15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		DECCA PART No.	STANDARD REPLACEMENT		
1	Power Output	50A5	50A5	6AA	
2	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	DECCA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
3A	50	150		EZ5515	2N521	DSB-2x50-150	TA-505	PRSA150-50-50	Filter - Red
B	50	150							" - "
4	10	25		BR102A	TC22	M-10-25	TA-10	PRS25-10	Cathode Bypass
5	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Tone Compensation

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	DECCA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
6A	500KΩ	½		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 6A per instructions
7A	500KΩ	½		MR48	D13-133	M-60-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 7A per instructions
C	Switch			M-26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	DECCA PART No.	IRC PART No.	
8	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
9	300Ω	1		BW-1-330	Or.-Blk.-Br. Filter
10	200Ω	10		AB-200	Line Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DECCA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
11	1500Ω	3.9Ω	80Ω	.5Ω		A-3865	T22S45	A-2928	

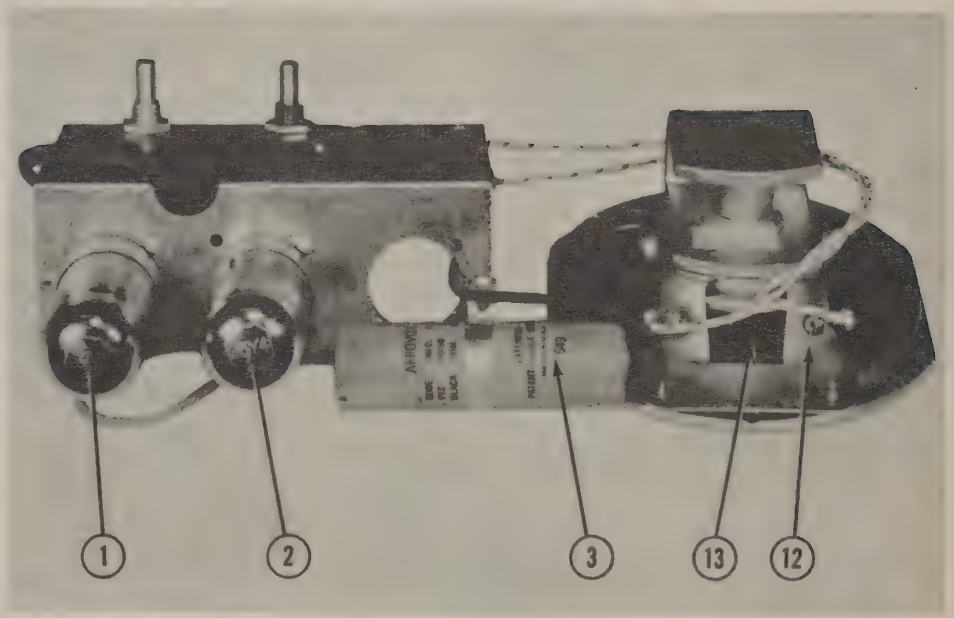
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			DECCA PART No.	JENSEN PART No.		
12	FIELD	VC IMP.		ST-107		
	PM	3.9Ω		Mod. P5-V		
	CONE DIA.	VC DIA.				
13	4-3/4"	1/2"	CONE HAS SPECIAL ADJUSTMENT FEATURE-ORDER FROM MANUFACTURER			

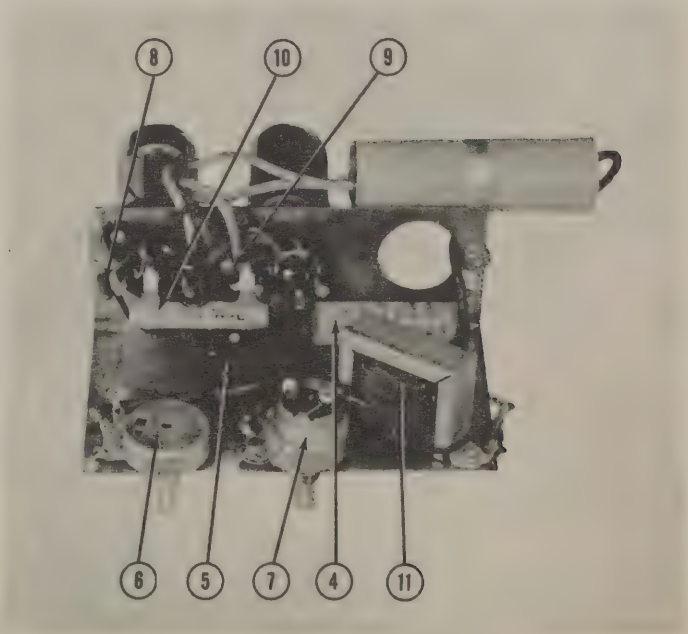
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	DECCA PART No.	ASTATIC PART No.	
14		L-72-A	

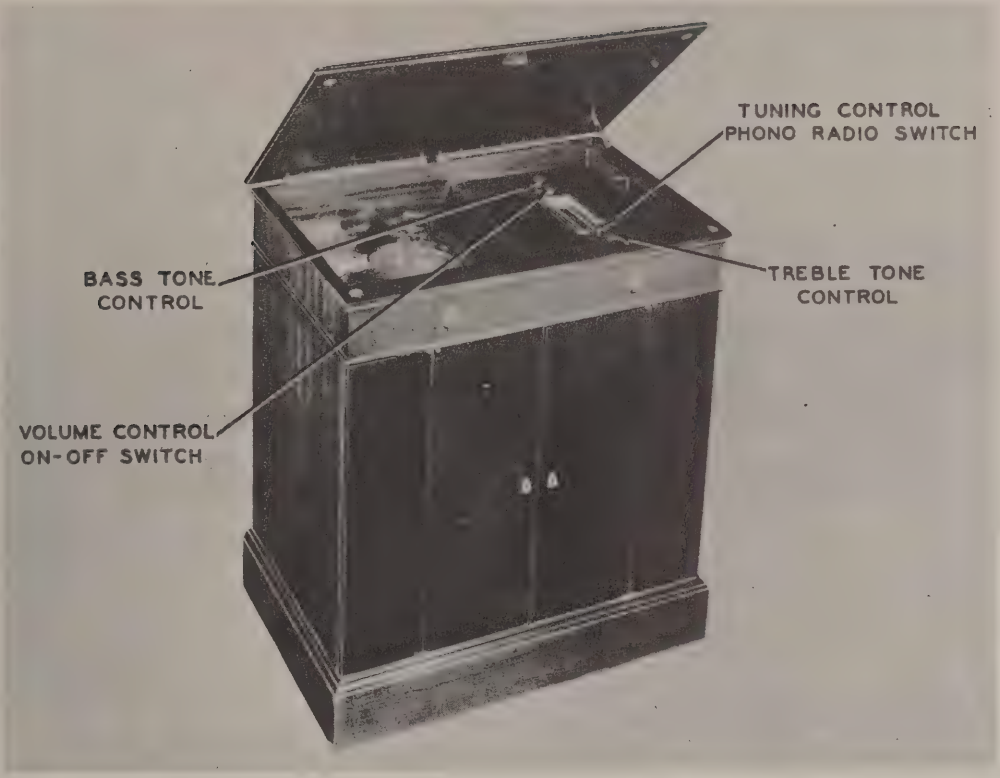
CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



ELECTRONIC LABORATORIES MODELS
710PC, 710PB (Ch. 2887) "ORTHOSONIC"



ELECTRONIC LABS. MODEL 710-PC

TRADE NAME	Electronic Labs., Models 710-PC, 710-PB "Orthosonic" (Ch. 2887)
MANUFACTURER	Electronic Laboratories, Inc., 122 W. New York St., Indianapolis, Ind.
TYPE SET	AC Operated (Some Models have DC Inverter) Radio_Phono Combination Superheterodyne
TUBES (TEN)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-Treble Amp., 12SQ7GT Bass Amp., 12SQ7GT Phase Inverter, (2) 50L6GT Power Output, (2) 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1620KC RATING .510 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to Pin 4 (grid) 12SK7 (RF Tube). Low side to B-.	455KC	Tuning slugs out completely.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.01 MFD.	"	"	"	"	A5	Adjust for minimum output.
3	400Ω carbon res.	High side to ext. ant. clip. Low side to ext. ground clip.	1620KC	"	"	A6	Adjust for maximum output.
4	"	"	1400KC	Tune for maximum output.	"	A7	" " " "
5	"	"	700KC	"	"	A8	Adjust for maximum output. Repeat Steps 2, 3, 4 and 5 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ELECT. LABS. PART No.	STANDARD REPLACEMENT		
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-Treble Amp.	12SQ7GT	12SQ7GT	8Q	
5	Bass Amp.	12SQ7GT	12SQ7GT	8Q	
6	Phase Inverter	12SQ7GT	12SQ7GT	8Q	
7	Power Output	50L6GT	50L6GT	7AC	
8	" "	50L6GT	50L6GT	7AC	
9	Rectifier	35Z5GT	35Z5GT	6AD	
10	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

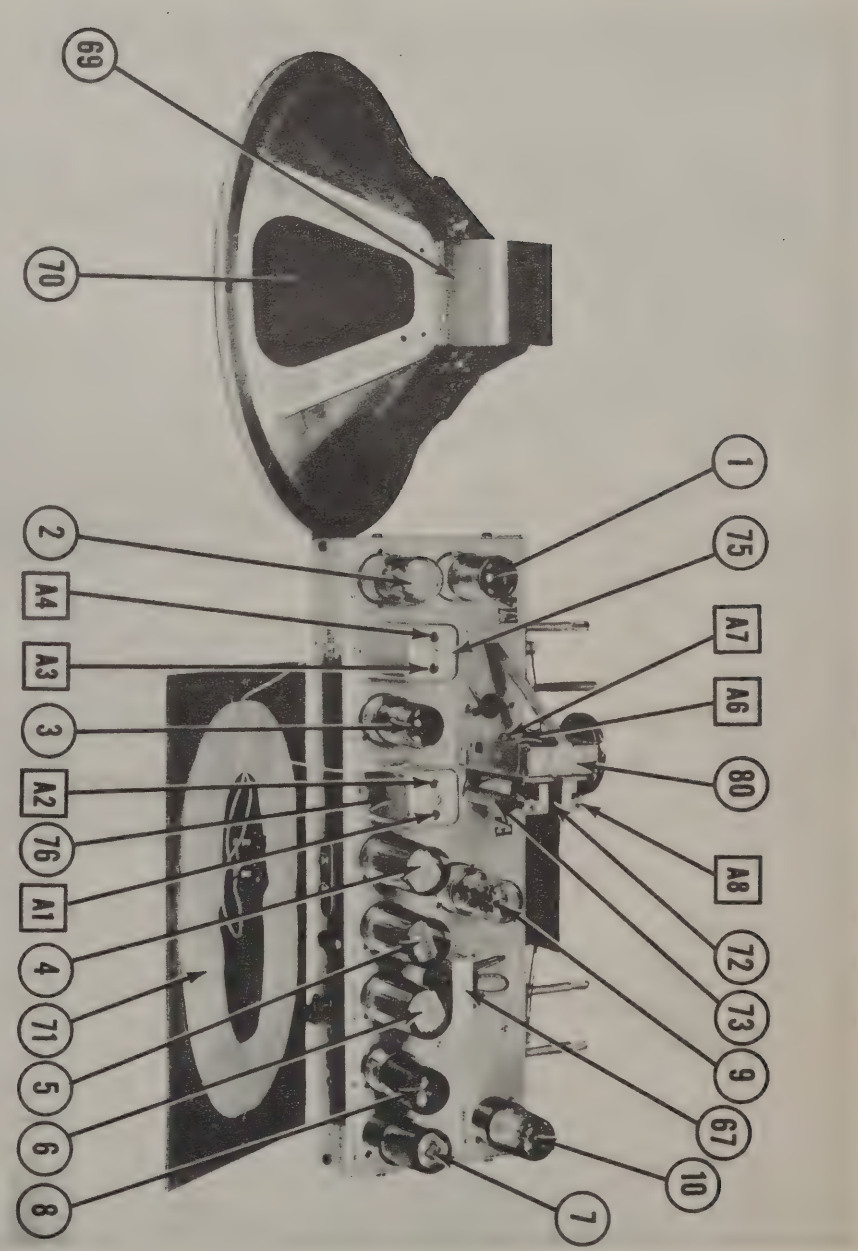
ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ELECT. LABS. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
11A	40	150	C-466A	BRD4415	2N511	M-2x40-150	TA-440	PRSA150-40-40	Filter - White
B	40	150							" - "
12A	40	150	C-466A	BRD4415	2N511	M-2x40-150	TA-440	PRSA150-40-40	" - "
B	40	150							" - "
13	25	25	C-462A	BR252A	TC26	M-25-25	TA-25	PRS25-25	Cath. Bypass
14	.1	400	C-471A	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Filter
15	.1	400	C-471A	DT4P1	TP428	S-4-1	TC-1	484-.1	Output Screen Bypass
16	.01	200	C-468A	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
17	.1	200	C-460A	DT4P1	TP428	S-4-1	TC-1	484-.1	" "
18	.01	200	C-468A	DT4S1	TP421	S-4-01	TC-11	484-01	" "
19	.001	400	C-524A	DT6D1	TP404	S-6-001	TC-21	484-001	" "
20	.05	200	C-467A	DT4S5	TP426	S-4-05	TC-15	484-05	" "
21	.1	400	C-471A	DT4P1	TP428	S-4-1	TC-1	484-.1	RF Bypass Pwr. Supp.
22	.003	400	C-523A	DT6D3	TP406	S-6-003	TC-23	484-003	Tone Compensation
23	.05	400	C-418A	DT4S5	TP426	S-4-05	TC-15	484-05	Audio Coupling
24	.01	400	C-500A	DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
25	.001	400	C-524A	DT6D1	TP404	S-6-001	TC-21	484-001	Audio Coupling
26	.1	400	C-471A	DT4P1	TP428	S-4-1	TC-1	484-.1	Phono Isolation
27	.01	200	C-468A	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
28	.05	200	C-467A	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
29	.2	400	C-497A	DT4P2	TP429	S-4-2	TC-2	484-.2	Line Isolation
30	.01	400	C-500A	DT4S1	TP421	S-4-01	TC-11	484-01	Osc. Feedback
31	.1	400	C-471A	DT4P1	TP428	S-4-1	TC-1	484-.1	RF Screen Bypass
32	.1	200	C-460A	DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
33	250	500	C-494A	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Tone Compensation
34	250	500	C-494A	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Diode Filter
35	100	500	C-492A	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Audio Plate Bypass
36	2000	300	C-531A	1W5D2	MC457	MW.5-22	1FM-22	1467-002	Osc. Feedback
37	50	500	C-495A	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Capacitor
38	1000	300	C-493A	1W5D1	MC255	MW.5-21	1FM-21	1468-001	RF Coupling
81	.01	200	C-468A	DT4S1	TP421	S-4-01	TC-11	484-01	IF Decoupling-See Note1

Note-Not used in all models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	ELECT. LABS PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
39A	500KΩ	1	W-489A	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 39A per instructions
C	Switch		" "	M26	41	SW-A	" " " "
40A	1 Meg.	1	W-476A	MK402	D13-137	AM-63-Z	Bass Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 40A per instructions
41A	1 Meg.	1	W-476A	MK402	D13-137	AM-63-Z	Treble Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 41A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ELECT. LABS. PART No.	IRC PART No.	
42	10KΩ	½		BTS-10K	Br.-Blk.-Yl. RF Screen Dropping - See Note 1
43	4700Ω	½	W-452A	BTS-4700	Yl.-Vi.-Red RF Plate Load
44	100KΩ	½	W-439A	BTS-100K	Br.-Blk.-Yl. Converter Grid
45	22KΩ	½	W-437A	BTS-22K	Red-Red-Or. Oscillator Grid
46	2.2 Meg.	½	W-442A	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
47	2.2 Meg.	½	W-442A	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
48	47KΩ	½	W-438A	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
49	470KΩ	½	W-441A	BTS-470K	Yl.-Vi.-Yl. Diode Load
50	4.7 Meg.	½	W-480A	BTS-4.7 Meg.	Yl.-Vi.-Grn. Treble Amp. Grid
51	33KΩ	½	W-478A	BTS-33K	Or.-Or.-Or. Tone Compensation
52	4.7 Meg.	½	W-480A	BTS-4.7 Meg.	Yl.-Vi.-Grn. Bass Amp. Grid
53	330KΩ	½	W-468A	BTS-330K	Or.-Or.-Yl. Bass Amp. Plate Load
54	470KΩ	½	W-441A	BTS-470K	Yl.-Vi.-Yl. Treble Amp. Plate Load
55	470KΩ	½	W-441A	BTS-470K	Yl.-Vi.-Yl. Phase Inverter Plate Load
56	4700Ω	½	W-452A	BTS-4700	Yl.-Vi.-Red Phase Inverter Cathode-See Note 2
57	470KΩ	½	W-441A	BTS-470K	Yl.-Vi.-Yl. Phase Inverter Grid
58	220KΩ	½	W-440A	BTS-220K	Red-Red-Yl. Isolation
59	220KΩ	½	W-440A	BTS-220K	Red-Red-Yl. "
60	220KΩ	½	W-440A	BTS-220K	Red-Red-Yl. Output Grid
61	270KΩ	½	W-477A	BTS-270K	Red-Vi.-Yl. " "
62	220KΩ	½	W-440A	BTS-220K	Red-Red-Yl. Output Grid
63	75Ω	1	W-479A	BW-1-82	Vi.-Grn.-Blk. Output Cathode
64	1000Ω	1	W-433A	BTA-1000	Br.-Blk.-Red Filter
65	220Ω	½	W-481A	BW-½-220	Red-Red-Br. Filter
66	470Ω	½	W-473A	BTS-470	Yl.-Vi.-Br. Pilot Light Shunt
82	4700Ω	½	W-452A	BTS-4700	Yl.-Vi.-Red IF Decoupling-See Note 2

Note 1-Some models use 15KΩ in this application. IRC replacement BTS-15K.
Note 2-Not used on all models.

TONE CHOKE

ITEM NO.	RATINGS		REPLACEMENT DATA				INSTALLATION NOTES
	D. C. RESISTANCE	INDUCTANCE (@ CURRENT 1000~)	ELECT. LABS. PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART NO.	
67	350Ω	4 Henries	C-1706				

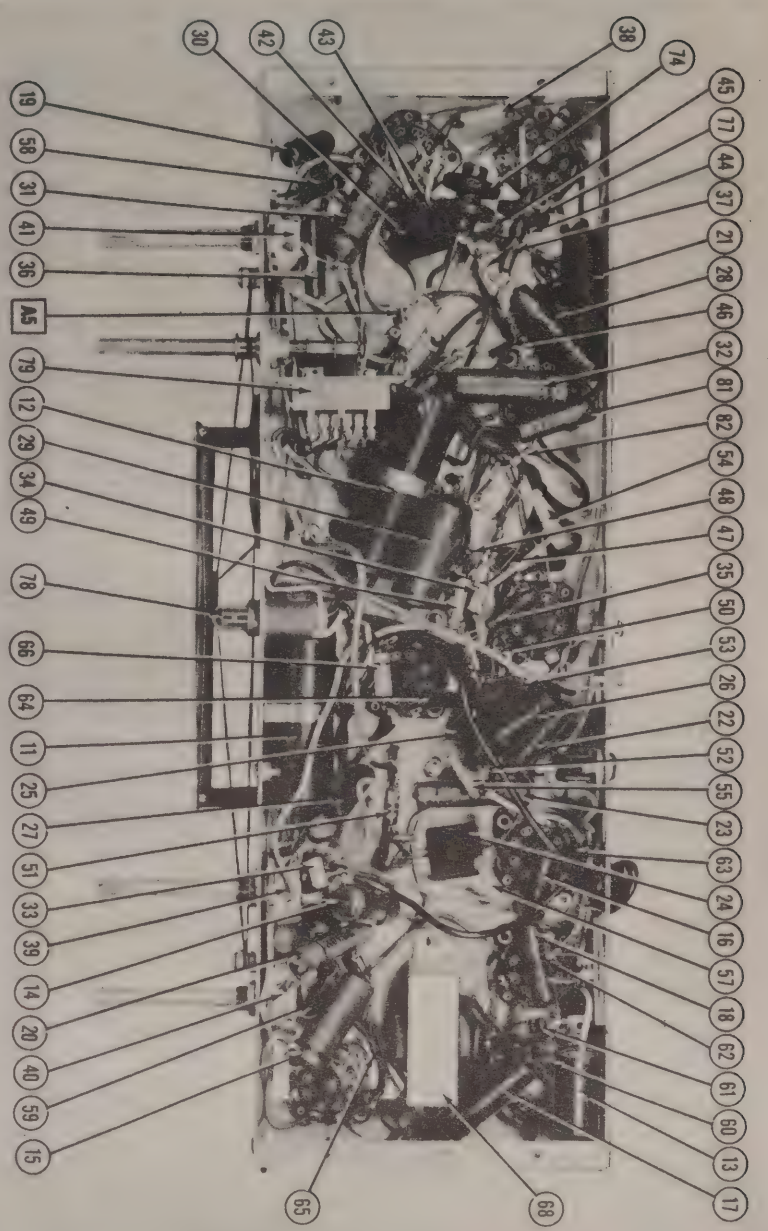
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ELECT. LABS. PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
68	2850Ω CT	3.2Ω	250Ω CT	.8Ω	T-1384A	A-3823	T22S60*	A-2901	*Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ELECT.LABS. PART No.	JENSEN PART No.		
69	FIELD PM	VC IMP. 3.2Ω	H256A	ST-102† Mod. P12-S		†Replace output transformer to match 8Ω voice coil.
70	CONE DIA. 12"	VC DIA. 1¼"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	ELECT. LABS. PART No.	MEISSNER PART No.
71	Loop Ant.	0Ω	1.3Ω	A2272A	
72	Ant. Coil		26Ω		
73	Osc. Coil		3.5Ω		
74	Wave Trap		47Ω	T1372A	
75	Input IF	15.5Ω	18Ω	T1361A	16-6658
76	Output IF	15.5Ω	15.5Ω	T1362A	16-6660
77	RF Choke	22Ω		T1365A	

DIAL LIGHT

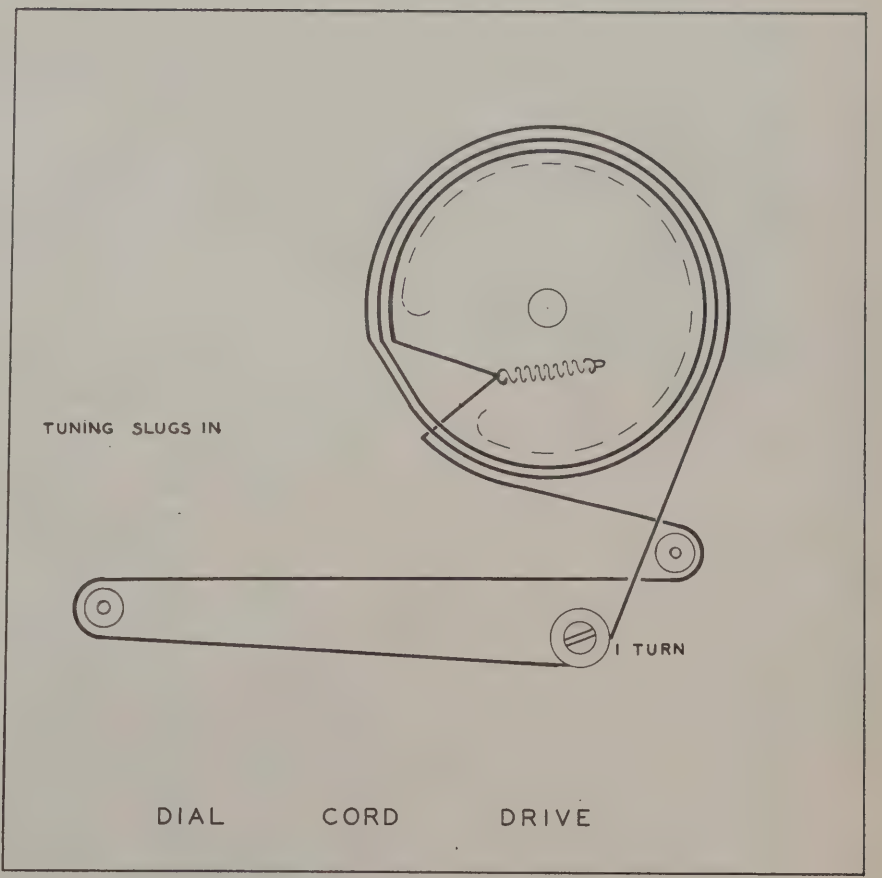
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ELECT. LABS. PART No.		
78	Bayonet	6-8	0.15	Brown	H-241A		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	ELECT. LABS. PART No.	NOTES
79	Switch	E-170A	Radio-Phono
80	Tuning Assby.	A-2220	
A5	Trimmer	C-483B	Wave Trap (10-160 MMF)
	Inverter Unit	2940	For DC Operation
	Auto. Changer	A-2246	

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs.
2. Loosen set screw and remove tuning control knob.
3. Remove speaker plug from chassis.
4. Remove phono-motor plug from chassis.
5. Remove phono-pickup lead from terminal strip on chassis.
6. Remove two wood screws holding loop antenna in cabinet.
7. Remove four bolts holding chassis in cabinet. Remove chassis and loop antenna from cabinet.
8. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.



RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	24VAC	0V.	-.7VDC	0V.	90VDC	12VAC	70VDC
2	12SA7GT	0V.	36VAC	111VDC	111VDC	-5VDC§	.3VDC	24VAC	-2.1VDC
3	12SK7GT	0V.	36VAC	0V.	-2.3VDC	0V.	111VDC	48VAC	111VDC
4	12SQ7GT	0V.	-.8VDC	0V.	-.7VDC	-.7VDC	63VDC	12VAC	0V.
5	12SQ7GT	0V.	-1VDC	0V.	0V.	0V.	65VDC	12VAC	0V.
6	12SQ7GT	0V.	0V.	.6VDC	0V.	0V.	50VDD	12VAC	24VAC
7	50L6GT	0V.	73VAC	118VDC	117VDC	0V.	0V.	117VAC	7VDC
8	50L6GT	0V.	73VAC	118VDC	117VDC	0V.	0V.	24VAC	7VDC
2	35Z5GT	0V.	117VAC	113VAC	0V.	113VAC	0V.	85VAC	138VDC
3	35Z5GT	0V.	48VAC	57VAC	0V.	117VAC	0V.	85VAC	120VDC

RESISTANCE READINGS

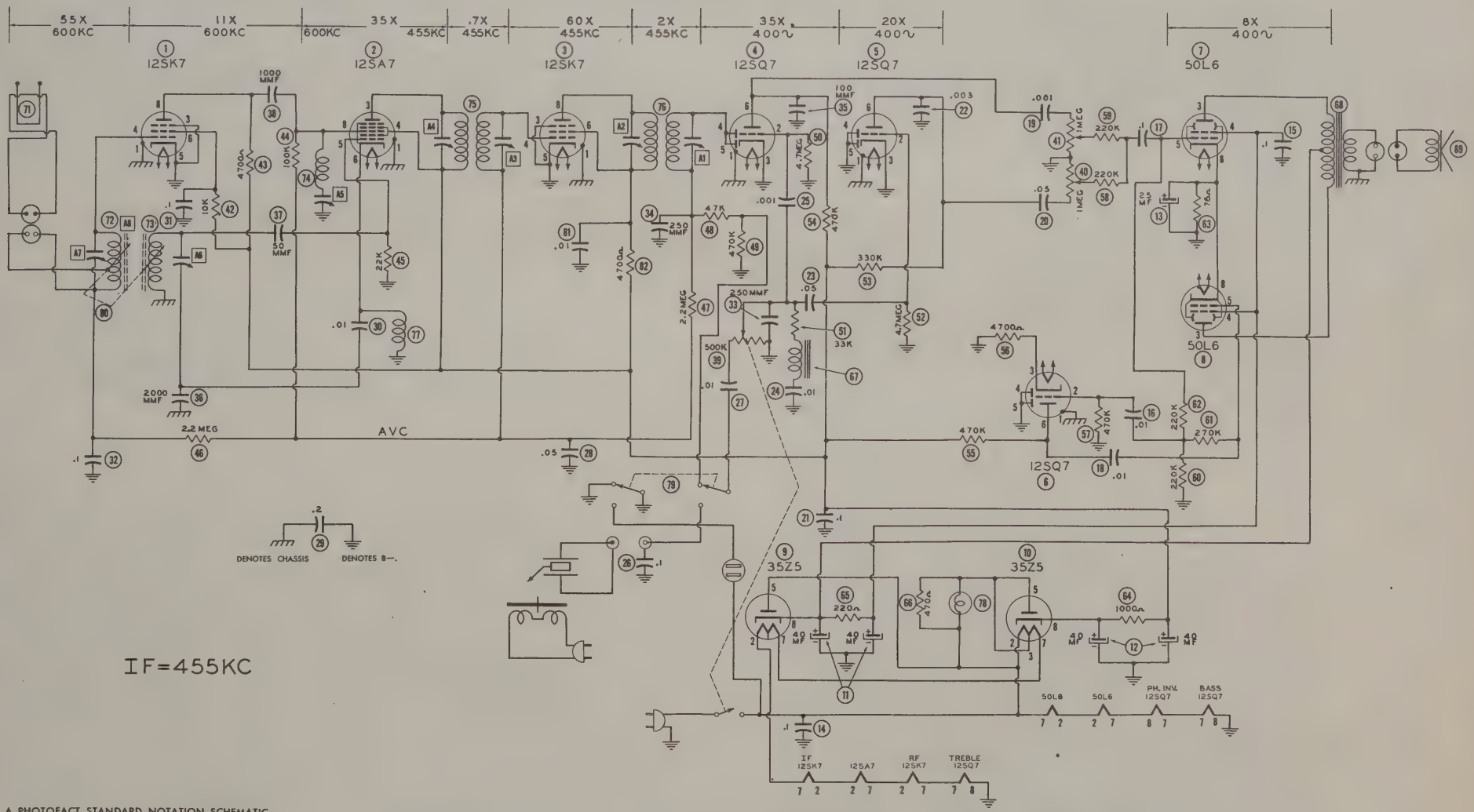
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	INF.	21Ω	0Ω	4.5 MEG.	0Ω	50KΩ	11Ω	45KΩ
2	12SA7GT	INF.	29Ω	40KΩ	40KΩ	20KΩ	23Ω	21Ω	2.5 MEG.
3	12SK7GT	INF.	29Ω	0Ω	2.5 MEG.	0Ω	40KΩ	36Ω	40KΩ
4	12SQ7GT	INF.	4.5 MEG.	0Ω	500KΩ	500KΩ	500KΩ	11Ω	0Ω
5	12SQ7GT	INF.	4.5 MEG.	0Ω	0Ω	0Ω	370KΩ	11Ω	0Ω
6	12SQ7GT	INF.	390KΩ	4.7KΩ	0Ω	0Ω	500KΩ	11Ω	21Ω
7	50L6GT	INF.	46Ω	80KΩ	80KΩ	450KΩ	INF.	54Ω	65Ω
8	50L6GT	INF.	46Ω	80KΩ	80KΩ	360KΩ	INF.	21Ω	65Ω
6	35Z5GT	INF.	54Ω	54Ω	0Ω	54Ω	0Ω	50Ω	40KΩ
7	35Z5GT	INF.	36Ω	40Ω	0Ω	54Ω	0Ω	50Ω	80KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DATE 9/47 SET 24 FOLDER #4714-16



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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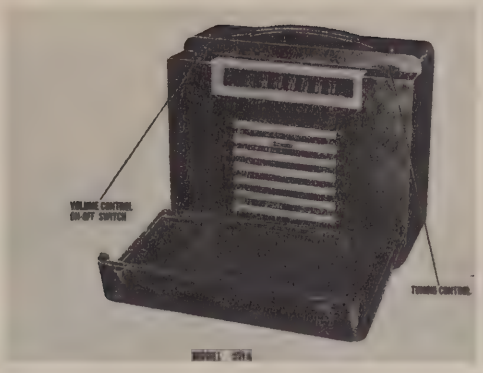
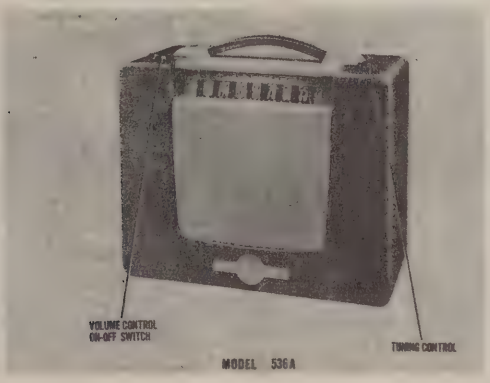
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4714-16

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

EMERSON MODELS 536A, 551A, 553A BATTERY OPERATED





TRADE NAME	Emerson, Models 536A, 551A, 553A
MANUFACTURER	Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N.Y.
TYPE SET	Three Power Portable Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 1T4 RF Amp., 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output, 117Z3 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC or 9 Volt "A" Supply & 90 Volt "B" Supply
RATING	.150 Amp. @ 117 Volts AC or 70 MA @ 9 Volts DC & 15 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Use battery power when available. If AC power is used, use an isolation transformer when available. If not connect a .1 MFD. capacitor in series with the low side of the signal generator and B-. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin #6 (grid) of 1R5. Low side to chassis.	262KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation. A2 will not be found on sets using #720007 output IF Trans.
2	200 MMF.	High side to ext. ant. lead. Low side to ground lead.	1600KC	"	"	A5	Adjust for maximum output.
3	200 MMF.	"	1400KC	Tune for maximum output.	"	A6,A7.	Adjust for maximum output.
4	200 MMF.	"	600KC	"	"	A8	Rock tuning capacitor and adjust for maximum output. Repeat Steps 2, 3 and 4 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

EMERSON MODELS 536A, 538A, 543A BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1T4	1T4	6AR	
2	Converter	1R5	1R5	7AT	
3	IF Amp.	1T4	1T4	6AR	
4	Det.-AVC-AF	1S5	1S5	6AU	
5	Power Output	3Q4	3Q4	7BA	
6	Rectifier	117Z3	117Z3	4BR	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	150	925059						▲ Filter
B	80	150							◀ "
C	40	150							■ "
D	100	25							Fil. Bypass
8	.05	400	920030	DT4S5	TP426	MFW-4-05	TC-15	484-05	Line Filter
9	.005	400	920180	DT6D5	TP408	S-6-005	TC-25	484-005	Output Plate Bypass
10	.005	400	920180	DT6D5	TP408	S-6-005	TC-25	484-005	Audio Coupling
11	.01	400	920090	DT4S1	TP421	S-4-01	TC-11	484-.1	AF Screen Bypass
12	.002	400	920515	DT6D2	TP405	S-6-002	TC-22	484-002	Audio Coupling
13	.05	200	920060	DT4S5	TP426	S-4-05	TC-15	484-05	Screen Bypass
14	.15	200	920420	DT4P1	TP417	S-4-1	TC-1	484-.15	Fil. Bypass
15	.01	400	920090	DT4S1	TP421	S-4-01	TC-11	484-01	IF Grid Filter
16	.05	200	920060	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
17	.1	200	920040	DT4P1	TP428	S-4-1	TC-1	484-.1	Fil. Bypass
18	.05	200	920060	DT4S5	TP426	S-4-05	TC-15	484-01	AVC Filter
19	110	500	910010	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AF Plate Bypass
20	220	500	910000	5W5T25	MC237	MO.5-32	1FM-32	1468-0002	Diode Filter

CONTROLS

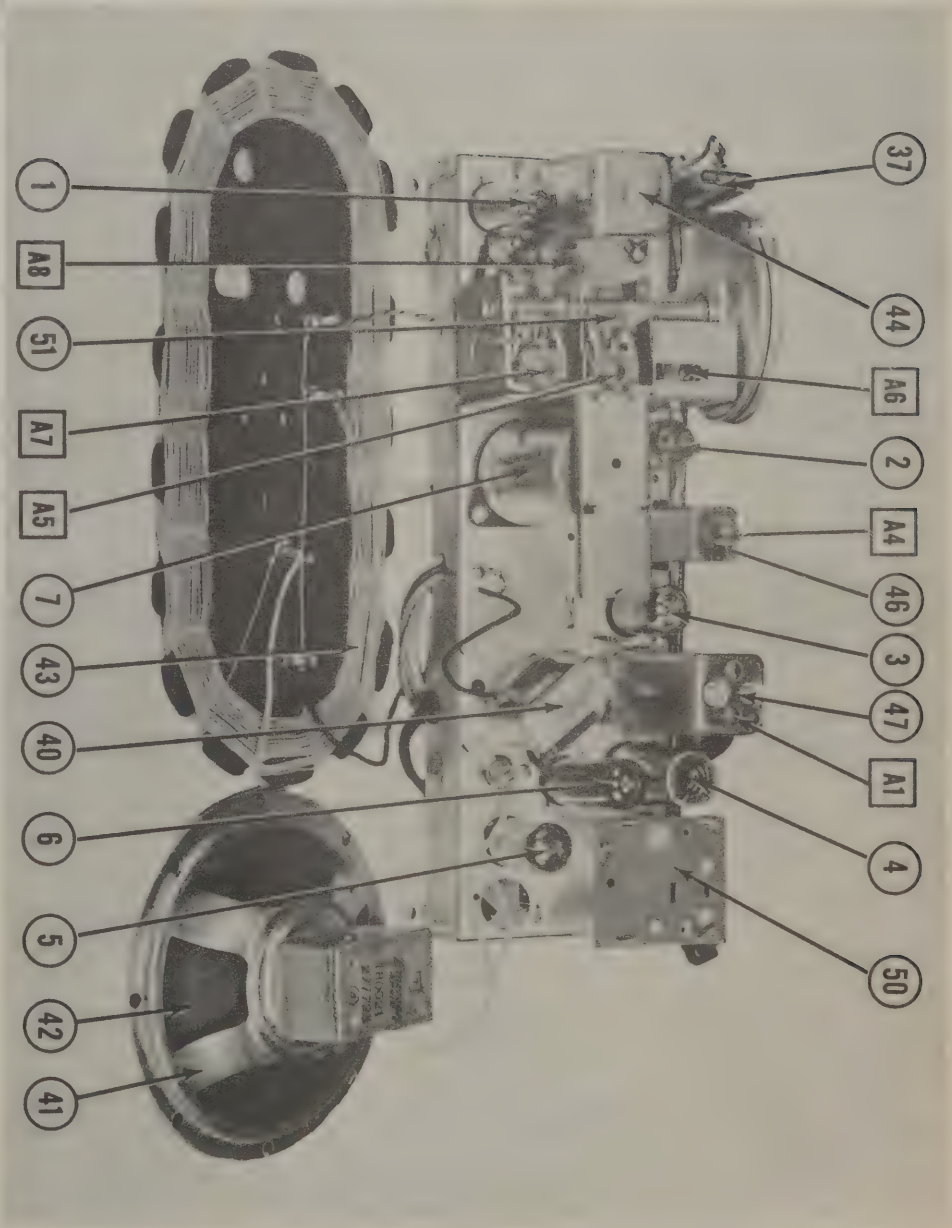
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500K	1	390003	MK-401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 21A per instructions
C	Switch		" "	M-27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
22	3.3 Meg.	½	341330	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
23	3.3 Meg.	½	341330	BTS-3.3 Meg.	Or.-Or.-Grn. " "
24	100K	½	350970	BTS-100K	Br.-Blk.-Yl. Osc. Grid
25	2.2 Meg.	½	341290	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
26	3.3 Meg.	½	351330	BTS-3.3 Meg.	Or.-Or.-Grn. IF Grid
27	18K	½	340790	BTS-18K	Br.-Gray-Or. Voltage Dropping
28	10 Meg.	½	351450	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
29	3.3 Meg.	½	351330	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
30	470K	½	351130	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
31	1.5 Meg.	½	351250	BTS-1.5 Meg.	Br.-Grn.-Grn. Output Grid
32	4.7 Meg.	½	351370	BTS-4.7 Meg.	Yl.-Vi.-Grn. Feedback
33	560Ω	½	340430	BTS-560	Grn.-Bl.-Br. Filament Network
34	1000Ω	½	340490	BTS-1000	Br.-Blk.-Red Filament Network
35	560Ω	1	370430	BTA-560	Grn.-Bl.-Brn. Filament Network
36	470Ω	1	370410	BTA-470	Yl.-Vi.-Br. Filament Network
37A	1100Ω	10	394008	ABA-2000*	Filter - See Note
B	1100Ω	10	394008	ABA-2000*	" - " "
38	1500Ω	½	340530	BTS-1500	Br.-Grn.-Red "
39	33Ω	1	370130	BW-1-33	Or.-Or.-Blk. Surge Limiter

Note - 37A and 37B are single resistor center-tapped.
* Set slider in center

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
40	10000Ω	4Ω	325Ω	.5Ω	734008	A-3879†	T22S47†	A-2932†	†Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			EMERSON PART No.	JENSEN PART No.		
41	FIELD PM	VC IMP. 4Ω	180021	ST-105 Mod. P5-X		
42	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT			

R F COILS

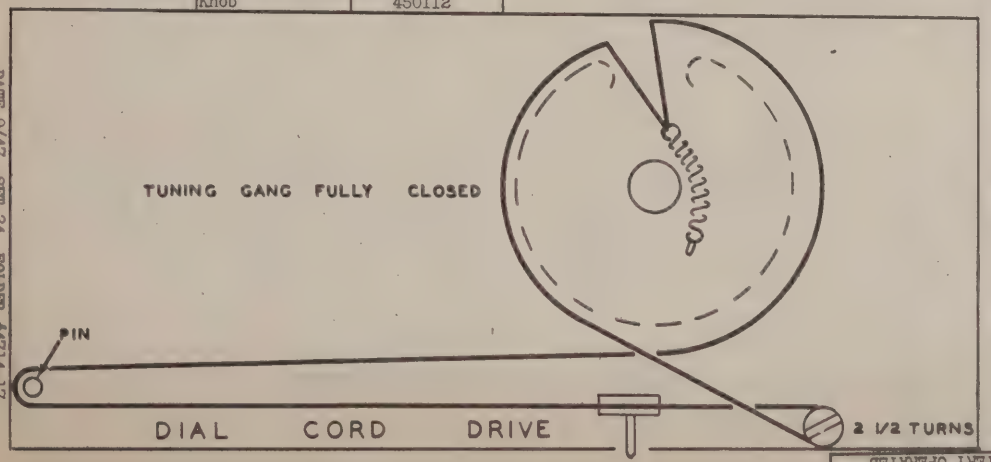
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
43	Loop Ant.	.2Ω	3.5Ω	700001		
44	RF Coil•	100Ω	4Ω	713006A		Alternate Part #713001
45	Osc. Coil	2Ω	7Ω	716006		
46	Input IF	37Ω	37Ω	720001		Alternate Part #720006
47	Output IF	39Ω	39Ω	720007		Alternate Part #720002

BATTERIES

ITEM No.	VOLTAGE	EMERSON PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
48	9 V. "A"		(2)#746			2 Used in series
49	90 V. "B"			(2) #482		2 Used in series

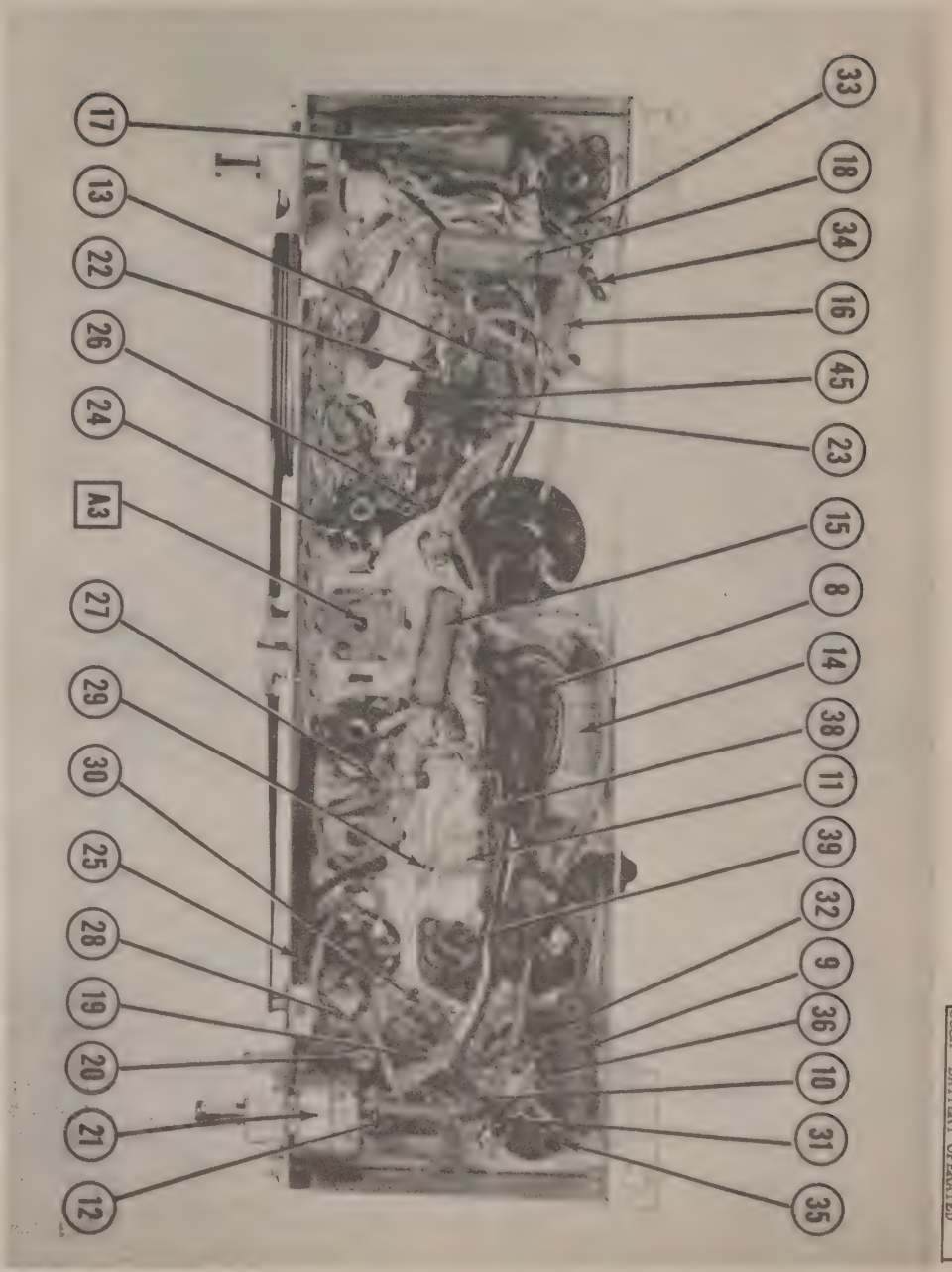
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
50	Switch	510270	Power Change-Over
51	3 Gang Var. Cap.	900006	22-416 MMF (each section)
	Cabinet	140066	Model 536A
	"	140112	Model 551A
	"	140107	Model 553A
	Pointer	525001	
	Dial Backplate	410011	
	Dial Glass	520000	
	Knob	450112	



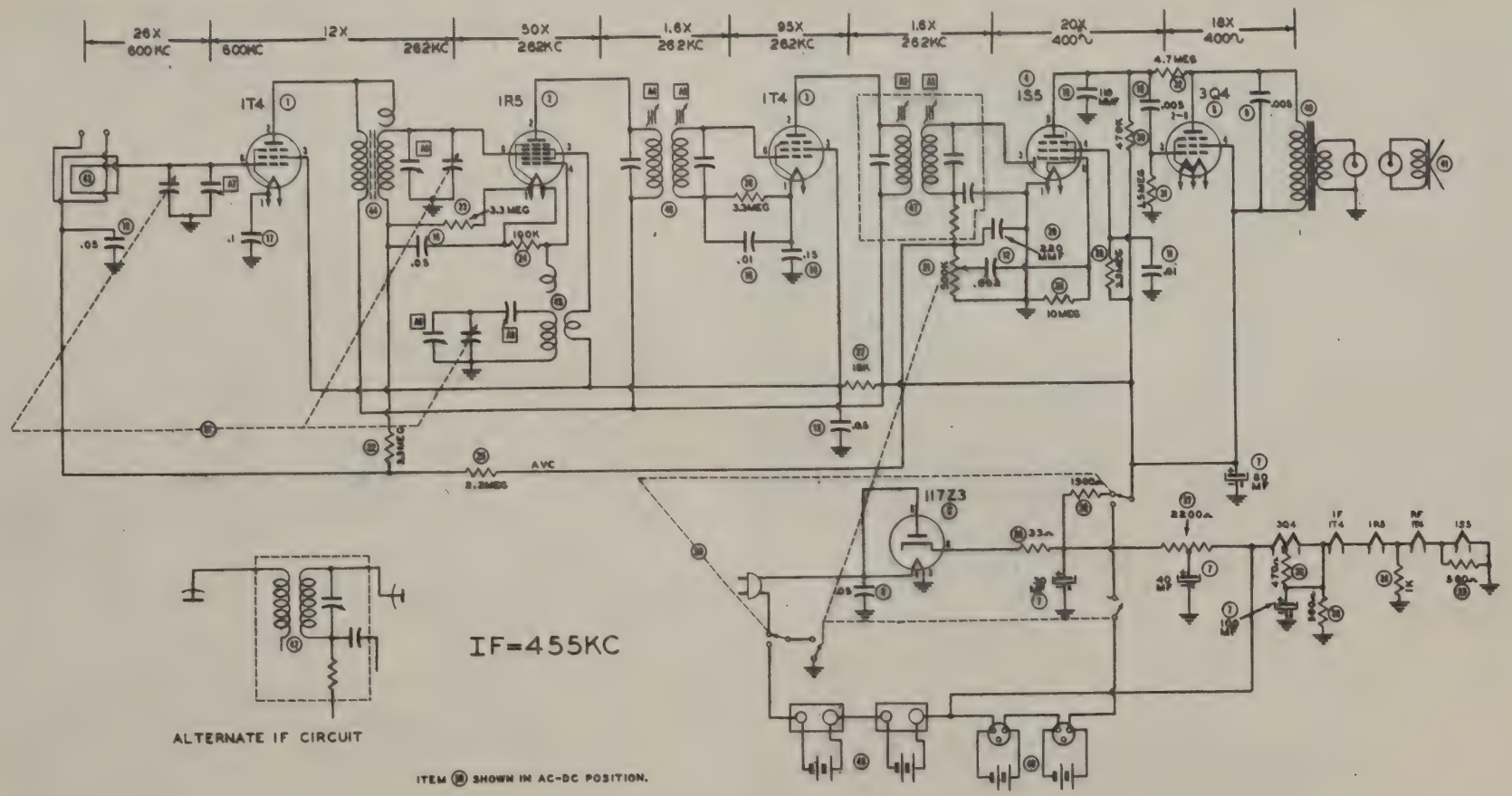
DATE 9/47 SET 24 FOLDER #4714-17

CHASSIS—BOTTOM VIEW



EMERSON MODELS 536A, 551A, 553A BATTERY OPERATED

EMERSON MODELS 536A, 551A, 553A BATTERY OPERATED



ALTERNATE IF CIRCUIT

ITEM (16) SHOWN IN AC-DC POSITION.

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITIONS.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1T4	1.3VDC	92VDC	47VDC	0V.	1.3VDC	.1VDC	2.6VDC
2	1R5	2.6VDC	92VDC	47VDC	-10VDC§	2.5VDC	.2VDC	3.9VDC
3	1T4	3.9VDC	92VDC	47VDC	0V.	38VDC	.2VDC	5.2VDC
4	1S5	0V.	-.1VDC	-.1VDC	25VDC	80VDC	0V.	1.3VDC
5	3Q4	8.2VDC	89VDC	0V.	92VDC	85VDC	89VDC	7.8VDC
6	117Z3	117VAC	0V.	0V.	117VAC	117VAC	115VDC	0V.

§TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1T4	*	3.6KΩ	21KΩ	1MF	*	2 Meg.	*
2	1R5	*	3.8KΩ	21KΩ	100KΩ	*	2.3 Meg.	*
3	1T4	*	3.8KΩ	21KΩ	1MF	*	3.5 Meg.	*
4	1S5	0Ω	490KΩ	540KΩ	3.5 Meg.	470KΩ	10 Meg.	*
5	3Q4	*	4KΩ	1.5 Meg.	3.8KΩ	*	4MΩ	*
6	117Z3	405Ω	1MF	0Ω	405Ω	405Ω	2.2K	1MF

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4714-17

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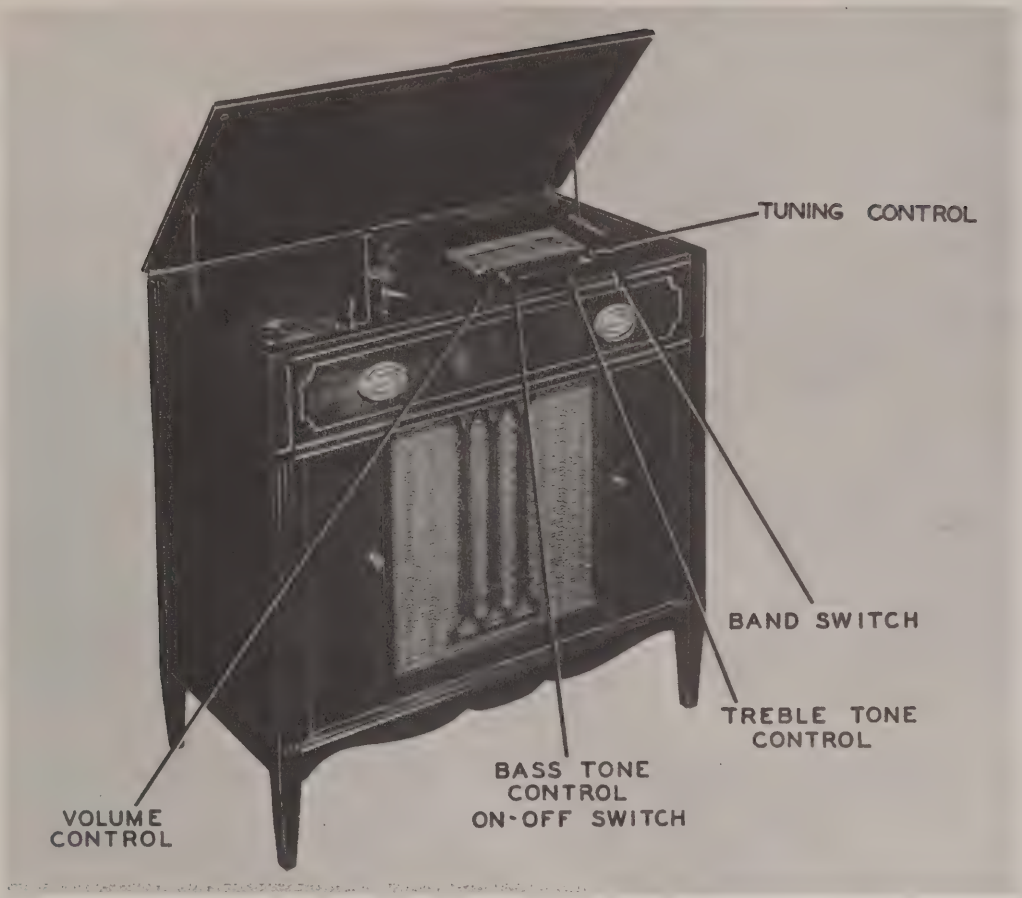
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to chassis.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FARNSWORTH MODELS GK-140, GK-141, GK-142, GK-143, GK-144



FARNSWORTH GK-141

TRADE NAME	Farnsworth, Models GK-140, GK-141, GK-142, GK-143, GK-144.
MANUFACTURER	Farnsworth Television & Radio Corp., Fort Wayne, Ind.
TYPE SET	AC Operated Phono-Radio Combination FM-AM Superheterodyne-Receiver with Self Contained Loop Antenna and Pushbutton Tuning
TUBES (FOURTEEN)	7AG7 FM RF Amp., 6AG5 FM Mixer, 6C4 FM Oscillator, 6SK7 1st IF Amp., 6SK7 FM 2nd IF Amp., 6SK7 FM 3rd IF Amp., 6H6 FM Ratio Det.-AVC, 6SK7 AM RF Amp., 6SA7 AM Converter, 6SQ7 AM Det.-AF-AVC, 6SQ7 Phase Inverter, 6V6GT Power Output, 6V6GT Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	1 Amp. @ 117 Volts AC
TUNING RANGE -	BROADCAST 530-1600KC, SHORT WAVE 9.2-15.4MC, FREQ. MOD. 88-108MC

PUSHBUTTON ADJUSTMENTS

1. Turn receiver on and allow it to warm up for about 30 minutes.
2. Make a list of eight stations to be set up.
3. Remove pushbuttons and loosen set screws about one turn.
4. Manually tune in first station desired to be set up and push in any button shaft. Holding shaft pushed in tighten set screw firmly.
5. Check accuracy of setting by detuning with manual control and retuning with button shaft. If setting is off, repeat Steps 3, 4 and 5.
6. Replace button.
7. To set up the remaining buttons follow the same procedure as outline above.

FARNSWORTH MODELS GK-140, GK-141, GK-142, GK-143, GK-144

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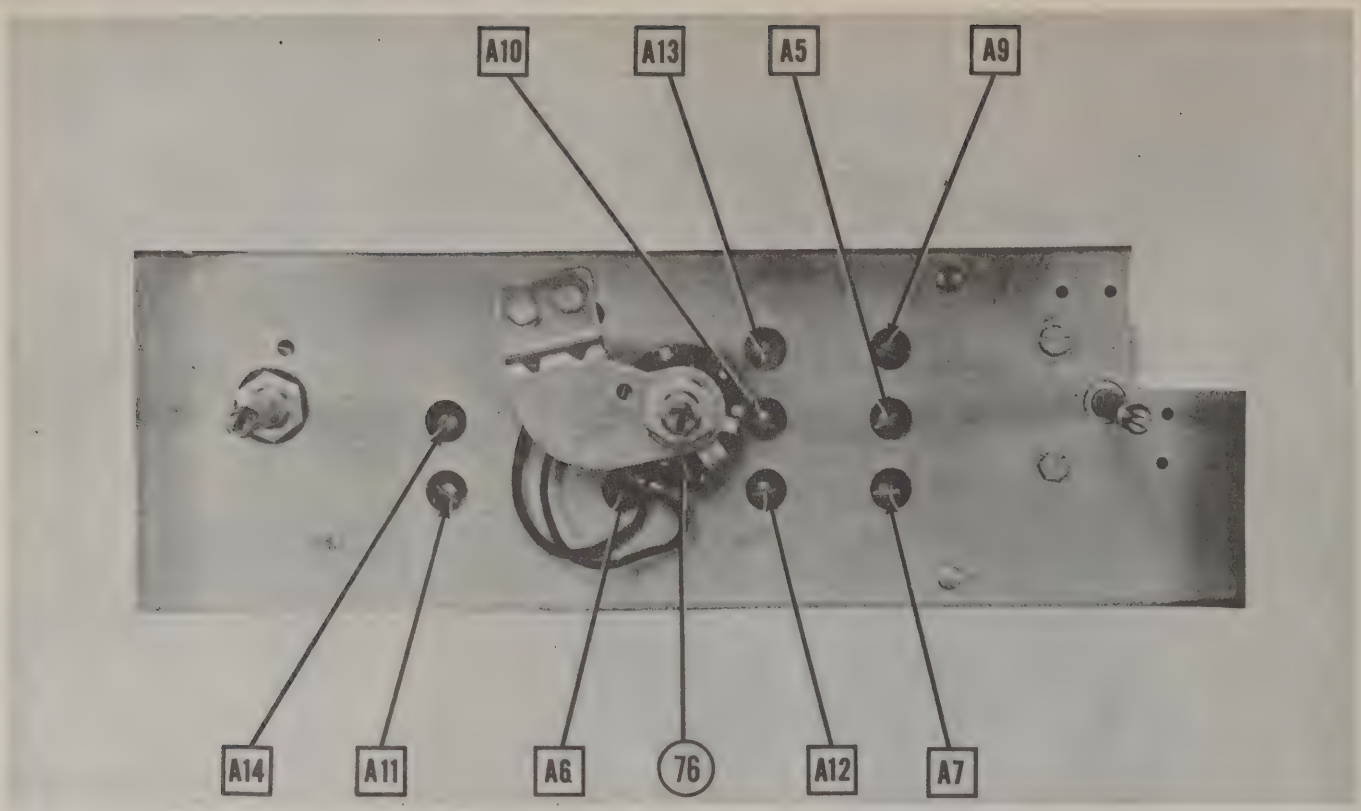
DATE 9/47 SET 24 FOLDER #4714-18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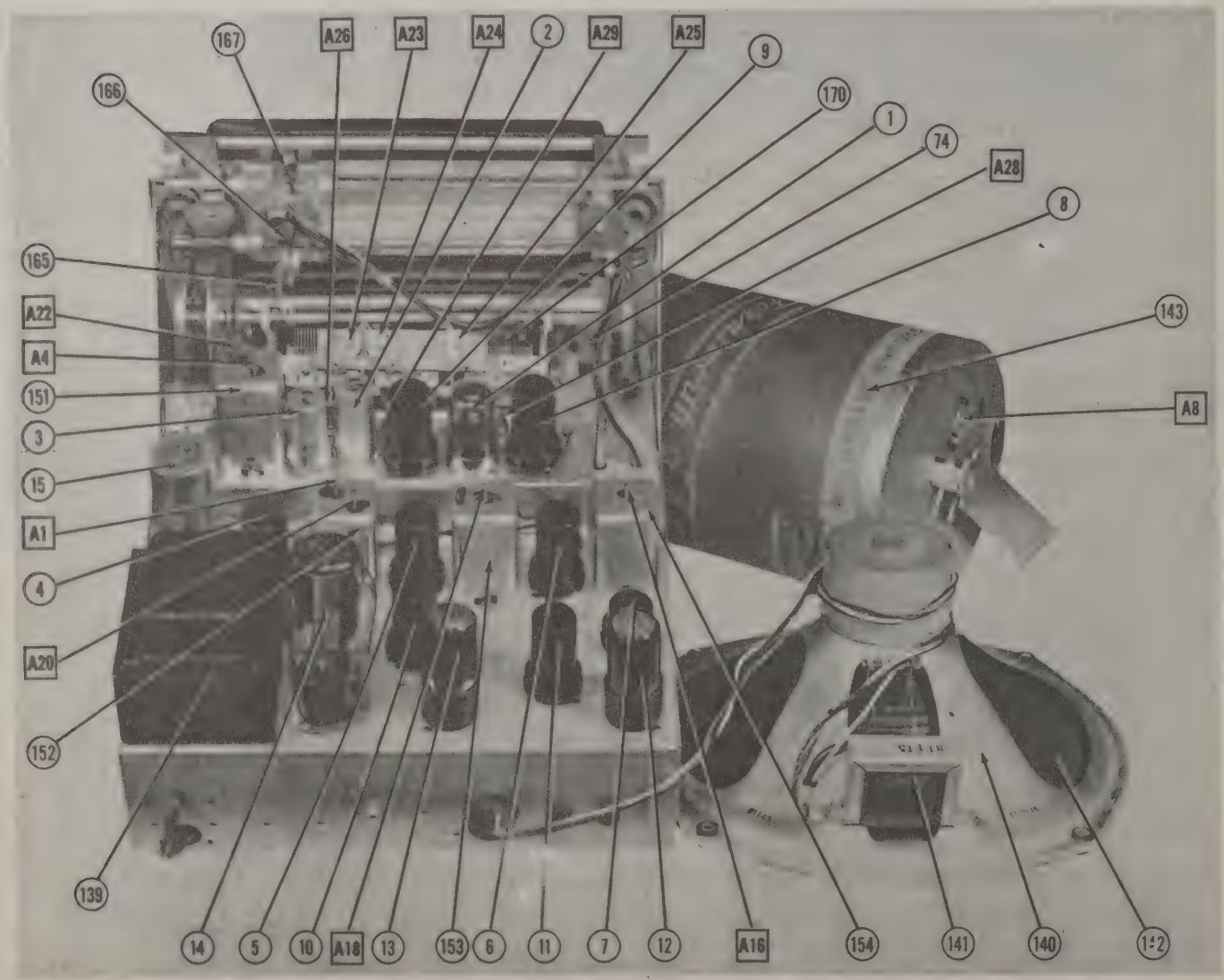
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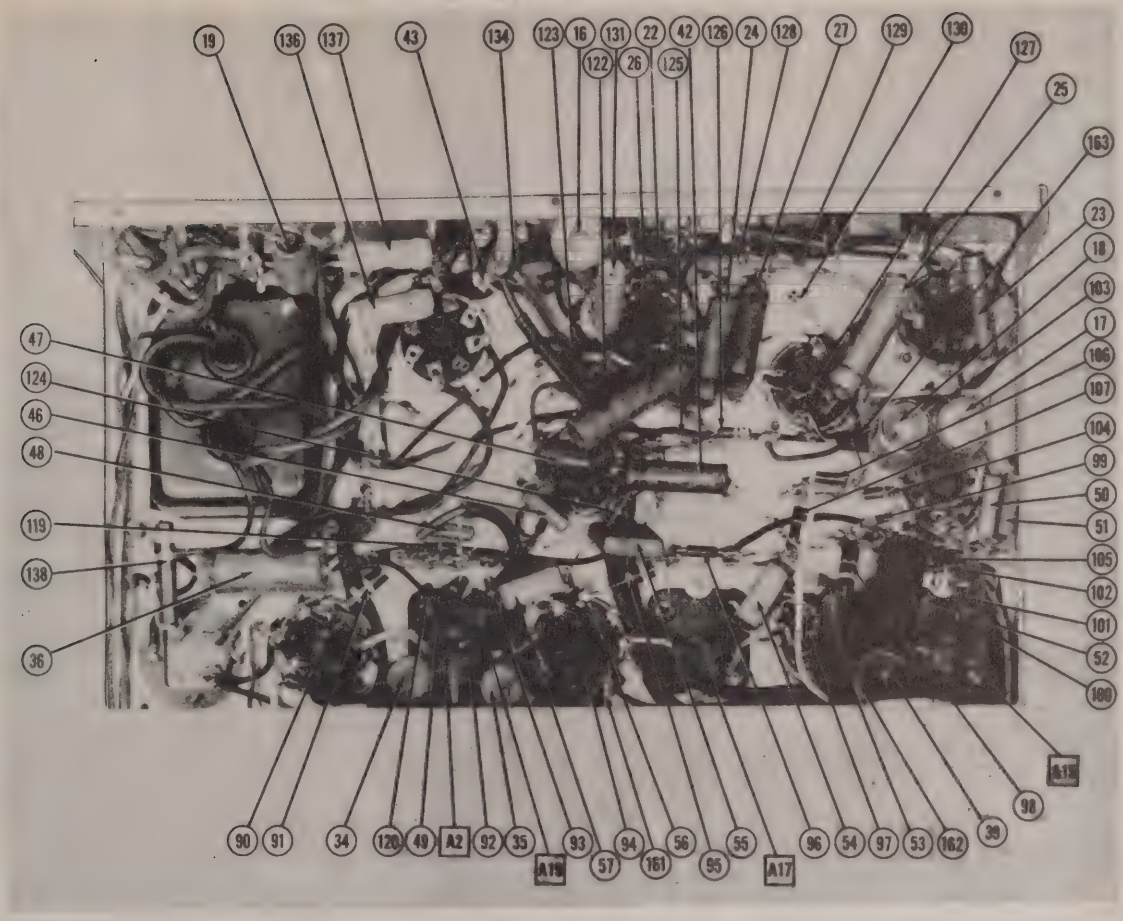
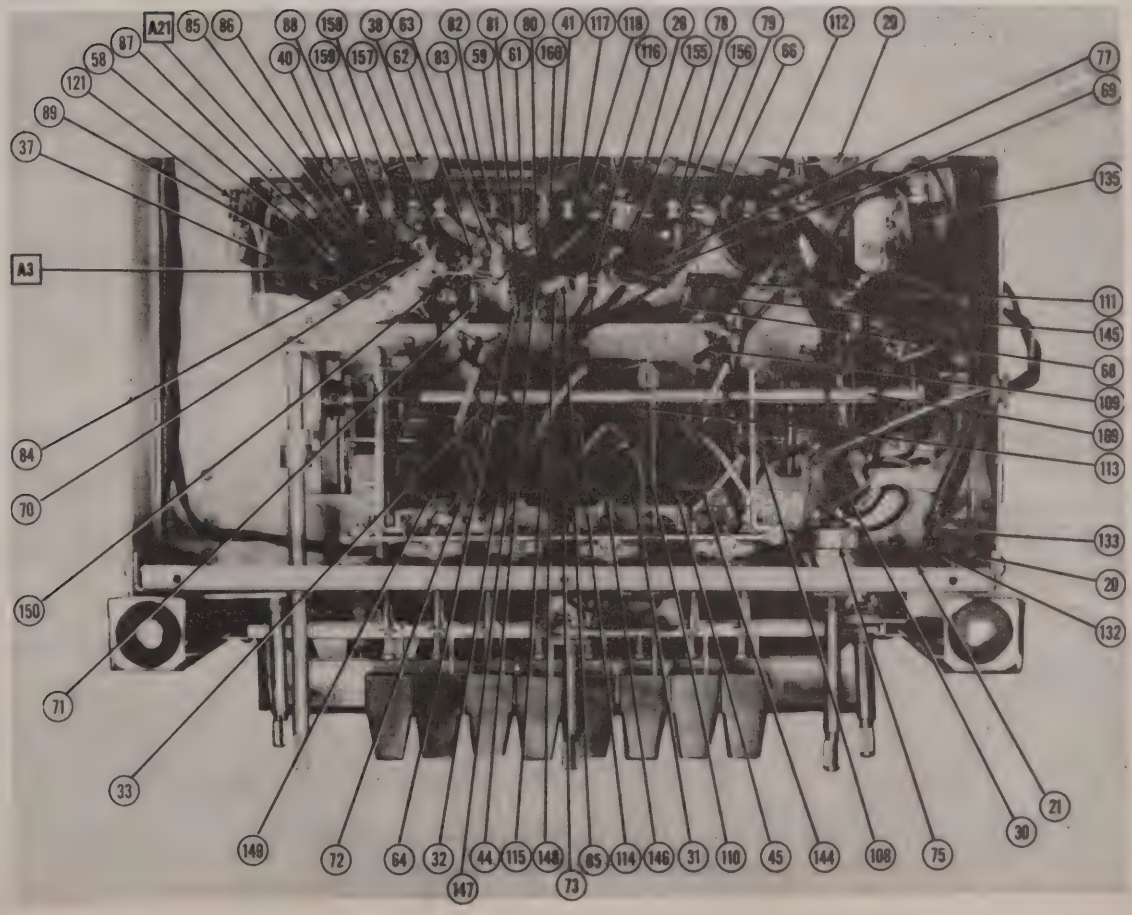
CHASSIS—BOTTOM VIEW REAR



CHASSIS—BOTTOM VIEW FRONT



PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	7AG7	7AG7	8V	
2	FM Mixer	6AG5	6AG5	7BD	
3	FM Oscillator	6C4	6C4	6BG	
4	1st IF Amp.	6SK7	6SK7	8N	
5	FM 2nd IF Amp.	6SK7	6SK7	8N	
6	FM 3rd IF Amp.	6SK7	6SK7	8N	
7	FM Ratio Det.-AVC	6H6	6H6	7Q	
8	AM RF Amp.	6SK7	6SK7	8N	
9	AM Converter	6SA7	6SA7	8R	
10	AM Det.-AF-AVC	6SQ7	6SQ7	8Q	
11	Phase Inverter	6SQ7	6SQ7	8Q	
12	Power Output	6V6GT	6V6GT	7AC	
13	" "	6V6GT	6V6GT	7AC	
14	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
15A	40	450	25277		FP429*	DY-406*	EL-424*	AF4444J†	▬ Filter
B	30	450							■ "
C	20	450							▲ "
16	50	25	25269	BR502	TC29	M-50-25	TA-50	PRS25-50	Output Cathode Bypass
17	4	100	25270	BR415	TC40	M-4-150	UT-41	PRS150-4	Ratio Det. Bias Net.
18	4	100	25270	BR415	TC40	M-4-150	UT-41	PRS150-4	" " " "
19	.005	600	25031	DT6D5	TP408	S-6-005	TC-25	684-005	Line Filter
20	.005	600	25183	DT6D5	TP408	S-6-005	TC-25	684-005	Tone Compensation
21	.01	600	25194	DT6S1	TP410	S-6-01	TC-11	684-01	Audio Coupling
22	.003	600	25184	DT6D3	TP406	S-6-003	TC-23	684-003	Output Plate Bypass
23	.003	600	25184	DT6D3	TP406	S-6-003	TC-23	684-003	" "
24	.01	600	25194	DT6S1	TP410	S-6-01	TC-11	684-01	Audio Coupling
25	.02	600	25195	DT6S2	TP412	S-6-02	TC-12	684-02	" "
26	.02	600	25195	DT6S2	TP412	S-6-02	TC-12	684-02	" "
27	.005	600	25183	DT6D5	TP408	S-6-005	TC-25	684-005	Tone Compensation
28	.1	600	25215	DT6P1	TP418	S-6-1	TC-1	684-.1	AM Conv. Screen Bypass
29	.05	600	25196	DT6S5	TP415	S-6-05	TC-15	684-05	AM RF Screen Bypass
30	.05	600	25196	DT6S5	TP415	S-6-05	TC-15	684-05	AVC Filter
31	.05	600	25196	DT6S5	TP415	S-6-05	TC-15	684-05	" "
32	.05	600	25196	DT6S5	TP415	S-6-05	TC-15	684-05	RF Plate Decoup.
33	.05	600	25196	DT6S5	TP415	S-6-05	TC-15	684-05	AVC Filter
34	.05	600	25196	DT6S5	TP415	S-6-05	TC-15	684-05	1st IF Decoup.
35	.05	600	25196	DT6S5	TP415	S-6-05	TC-15	684-05	RF Bypass Pwr. Supply
36	.05	600	25196	DT6S5	TP415	S-6-05	TC-15	684-05	1st IF Screen Bypass
37	.05	600	25196	DT6S5	TP415	S-6-05	TC-15	684-05	AVC Filter
38	.05	600	25196	DT6S5	TP415	S-6-05	TC-15	684-05	AM Conv. Decoup.
39	.1	600	25215	DT6P1	TP418	S-6-1	TC-1	684-.1	RF Bypass Pwr. Supp.
40	.1	600	25215	DT6P1	TP418	S-6-1	TC-1	684-.1	" " " "
41	.1	600	25215	DT6P1	TP418	S-6-1	TC-1	684-.1	" " " "
42	.01	600	25194	DT6S1	TP410	S-6-01	TC-11	684-01	Audio Coupling
43	47	500	25193	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Phono Coupling
44	47	500	25193	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Cap.
45	5000	300	25141	1D5D5	MC465	MW.5-25	1FM-25	1467-005	AVC Filter
46	47	500	25193	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Diode Coupling
47	100	500	25188	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	1st AF Plate Bypass
48	100	500	25188	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
49	100	500	25188	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
50	200	500	25318	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	Ratio Det. Load
51	200	500	25318	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	" " "
52	2000	300	25272	1W5D2	MC457	MW.5-22	1FM-22	1467-002	3rd IF Decoupling
53	1500		25273	1W5D15	MC256	MW.5-215	1FM-215	1467-0015	" " Screen Bypass Cer
54	5000	300	25141	1D5D5	MC465	MO.5-25	1FM-25	1467-005	3rd IF Cathode Bypass
55	2000	300	25272	1W5D2	MC457	MW.5-22	1FM-22	1467-002	2nd IF Decoup. Cer.
56	1500		25273	1W5D15	MC256	MW.5-215	1FM-215	1467-0015	2nd IF Screen Bypass
57	5000	300	25141	1D5D5	MC465	MO.5-25	1FM-25	1467-005	FM AVC Filter
58	1500		25273	1W5D15	MC256	MW.5-215	1FM-215	1467-0015	Conv. Plate Decoup. Cer.
59	1500		25273	1W5D15	MC256	MW.5-215	1FM-215	1467-0015	Conv. Decoup. Cer.
60	600		25274	1W5T6		MO.5-36			Conv. Screen Bypass Cer.
61	1500		25273	1W5D15	MC256	MW.5-215	1FM-215	1467-0015	Conv. Cathode Bypass Cer
62	2		25275						FM Osc. Coupling Cer.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
115	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
116	100Ω	½	77256	BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
117	22KΩ	½	77266	BTS-22K	Red-Red-Or. AM-Oscillator Grid
118	15KΩ	2	77325	BTS-15K	Br.-Grn.-Or. AM Converter Screen Dropping
119	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Diode Load
120	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
121	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
122	1 Meg.	½	77270	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
123	2.2 Meg.	½	77270	BTS-2.2 Meg.	Red-Red-Grn. AVC Bias
124	10 Meg.	½	77274	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
125	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
126	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Phase Inverter Plate Load
127	10 Meg.	½	77274	BTS-10 Meg.	Br.-Blk.-Blue Phase Inverter Grid
128	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Output Grid
129	220KΩ	½	77216	BTS-220K	Red-Red-Yl. " "
130	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Output Grid
131	230Ω	5	77338	ABA-250	Output Cathode-See Note 1
132	2.2 Meg.	½	77270	BTS-2.2 Meg.	Red-Red-Grn. Tone Compensation
133	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. Tone Compensation - See Note 2
134	2.2 Meg.	½	77270	BTS-2.2 Meg.	Red-Red-Grn. Series Phono
135	4.7Ω	2	77339	BW-2-4.7	Yl.-Vi.-Gold Series Pilot Light
136	500Ω	5	77337	AB-500	Filter
137	500Ω	5	77337	AB-500	"
138	27Ω	1	77428	BW-1-27	Red-Vi.-Blk. Bias

Note 1 - On IRC replacement set slider at 230Ω from one end.
Note 2 - Some models may use 220KΩ in this application. IRC replacement BTS-220K.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
139	117V AC @ 1.0A	600V CT @ .125A	5.0V AC @ 3.0A	6.4V AC @ 3.8Ω	94176-A	P-6013	T22R05	P-2953

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
140	8800Ω CT	3.5Ω	420Ω CT	.3Ω	Part of 81145	A-3824	T22S56	P-2936#	#Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: JENSEN PART No.	INSTALLATION NOTES
141	FIELD PM	VC IMP. 3.5Ω	81145	ST-101† Mod. P12-T	†Replace output transformer to match 8Ω voice coil.
142	CONE DIA. 11½"	VC DIA. 1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT		

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FARNSWORTH PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
63	50		25143	5W5.5	MC225	MO.5-45	1FM-45	1468-00005	RF Coupling Cer.
64	90		25347						Fixed Pad Cer.
65	50		25143	5W5.5	MC225	MO.5-45	1FM-45	1468-00005	RF Coupling Cer.
66	1500		25273	1W5D15	MC256	MW.5-215	1FM-215	1467-0015	RF Screen Decoup. Cer.
67	600		25274	1W5T6		MO.5-36			" " Bypass Cer.
68	90		25347						Fixed Pad Cer.
69	1500		25273	1W5D15	MC256	MW.5-215	1FM-215	1467-0015	RF Cathode Bypass Cer.
70	50		25143	5W5.5	MC225	MO.5-45	1FM 45	1468-00005	Osc. Grid Cer.
71	55		25346						Fixed Pad Cer.
72	200	500	25313	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	SW Osc. Fixed Padder
73	200	500	25313	5R5T2	MC237	MO5.5-32	MS-32	1469-0002	SW Conv. Fixed Padder

*Omit one section.
‡Parallel two sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FARNSWORTH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
74A	3 Meg.	1	78057				Volume Control
B	Shaft		Not Req.				Attach to 74A per instructions
75A	2.2Meg.	1	78101	TM-251		AT-116	Bass Control
B	Shaft		Not Req.	S825		KSS-3	Attach to 75A per instructions
C	Switch		" "	M26		SW-A	" " " " "
76A	1.5Meg.	1	78103	MK403	D13-139	AM-66-Z	Treble Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 76A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FARNSWORTH PART No.	IRC PART No.	IDENTIFICATION CODES
77	270Ω	½	77323	BW-½-270	Red-Vi.-Br. FM-RF Cathode
78	1000Ω	½	77282	BTS-1000	Br.-Blk.-Red FM RF Decoupling
79	1000Ω	½	77282	BTS-1000	Br.-Blk.-Red FM RF Screen Dropping
80	220KΩ	½	77216	BTS-220K	Red-Red-Yl. FM Mixer Grid
81	470Ω	½	77261	BTS-470	Yl.-Vi.-Br. FM Mixer Cathode
82	56KΩ	½	77324	BTS-56K	Grn.-Blue-Or. FM Mixer Screen Dropping
83	1000Ω	½	77282	BTS-1000	Br.-Blk.-Red FM Mixer Screen Decoupling
84	22KΩ	½	77286	BTS-22K	Red-Red-Or. FM Oscillator Grid
85	4700Ω	1	77438	BTA-4700	Yl.-Vi.-Red FM Oscillator Plate Decoupling
86	1000Ω	½	77282	BTS-1000	Br.-Blk.-Red FM Converter Plate Decoupling
87	22KΩ	½	77286	BTS-22K	Red-Red-Or. FM 1st IF Transformer Shunt
88	1000Ω	½	77282	BTS-1000	Br.-Blk.-Red AM Converter Plate Decoupling
89	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
90	68Ω	2	77269	BW-½-68	Blue-Gray-Blk. 1st IF Cathode
91	39KΩ	1	77322	BTA-39K	Or.-White-Or. 1st IF Screen Dropping
92	1000Ω	½	77282	BTS-1000	Br.-Blk.-Red 1st IF Decoupling
93	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
94	68Ω	2	77269	BW-½-68	Blue-Gray-Blk. 2nd IF Cathode
95	39KΩ	1	77322	BTA-39K	Or.-White-Or. 2nd IF Screen Dropping
96	1000Ω	½	77282	BTS-1000	Br.-Blk.-Red 2nd IF Decoupling
97	220Ω	2	77266	BW-½-220	Red-Red-Br. 3rd IF Cathode
98	39KΩ	1	77322	BTA-39K	Or.-White-Or. 3rd IF Screen Dropping
99	1000Ω	½	77282	BTS-1000	Br.-Blk.-Red 3rd IF Decoupling
100	330KΩ	½	77268	BTS-330K	Or.-Or.-Yl. Ratio Detector Network
101	330KΩ	½	77268	BTS-330K	Or.-Or.-Yl. " " "
102	1 Meg.	½	77270	BTS-1 Meg.	Br.-Blk.-Grn. Ratio Detector Load
103	68KΩ	½	77305	BTS-68K	Blue-Gray-Or. Ratio Detector Bias Network
104	68KΩ	½	77305	BTS-68K	Blue-Gray-Or. Ratio Detector Bias Network
105	22KΩ	½	77286	BTS-22K	Red-Red-Or. De-emphasis
106	1 Meg.	½	77270	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
107	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
108	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
109	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
110	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
111	100Ω	2	77240	BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
112	68KΩ	½	77305	BTS-68K	Blue-Gray-Or. AM-RF Screen Dropping
113	1000Ω	½	77282	BTS-1000	Br.-Blk.-Red AM-RF Plate Decoupling
114	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network

DATE 9/47 SET 24 FOLDER #4714-18

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA FARNSWORTH PART No.	REPLACEMENT DATA MEISSNER PART No.	
143	Loop Ant.	100Ω	1Ω	38670		
144	SW Ant.Coil	0Ω	.2Ω	38678		
145	FM Ant.Coil		0Ω	38671		
146	BC RF Coil	2Ω	7Ω	38677		
147	SW RF Coil	5Ω	0Ω	38676		
148	FM RF Coil		0Ω	38672		
149A	OC Osc. "		6.5Ω	38675		Items 149A & 149B wound on same coil form
B	SW " "		0Ω			
150	FM " "		0Ω	38673		
151A	AM Input IF	13Ω	13.5Ω	38621		Items 151A & 151B in same can. AM secondary resistance reading includes both FM and AM secondaries .
B	FM Input IF	.5Ω				
152A	AM Output IF	13.5Ω	13.5Ω	38622		Items 152A & B in same can. AM primary resistance reading includes both FM and AM primaries.
B	FM 2nd IF		1Ω			
153	FM 3rd IF	1Ω	1Ω	38623		
154	Ratio Det. Trans.	1Ω	1Ω	38624		
155	RF Choke	.1Ω		38661		
156	" "	.1Ω		38661		
157	" "	.1Ω		38661		
158	" "	.1Ω		38661		
159	" "	.1Ω		38661		
160	" "	.1Ω		38661		
161	" "	.1Ω		38661		
162	" "	.1Ω		38661		
163	" "	.1Ω		38661		

DIAL LIGHT

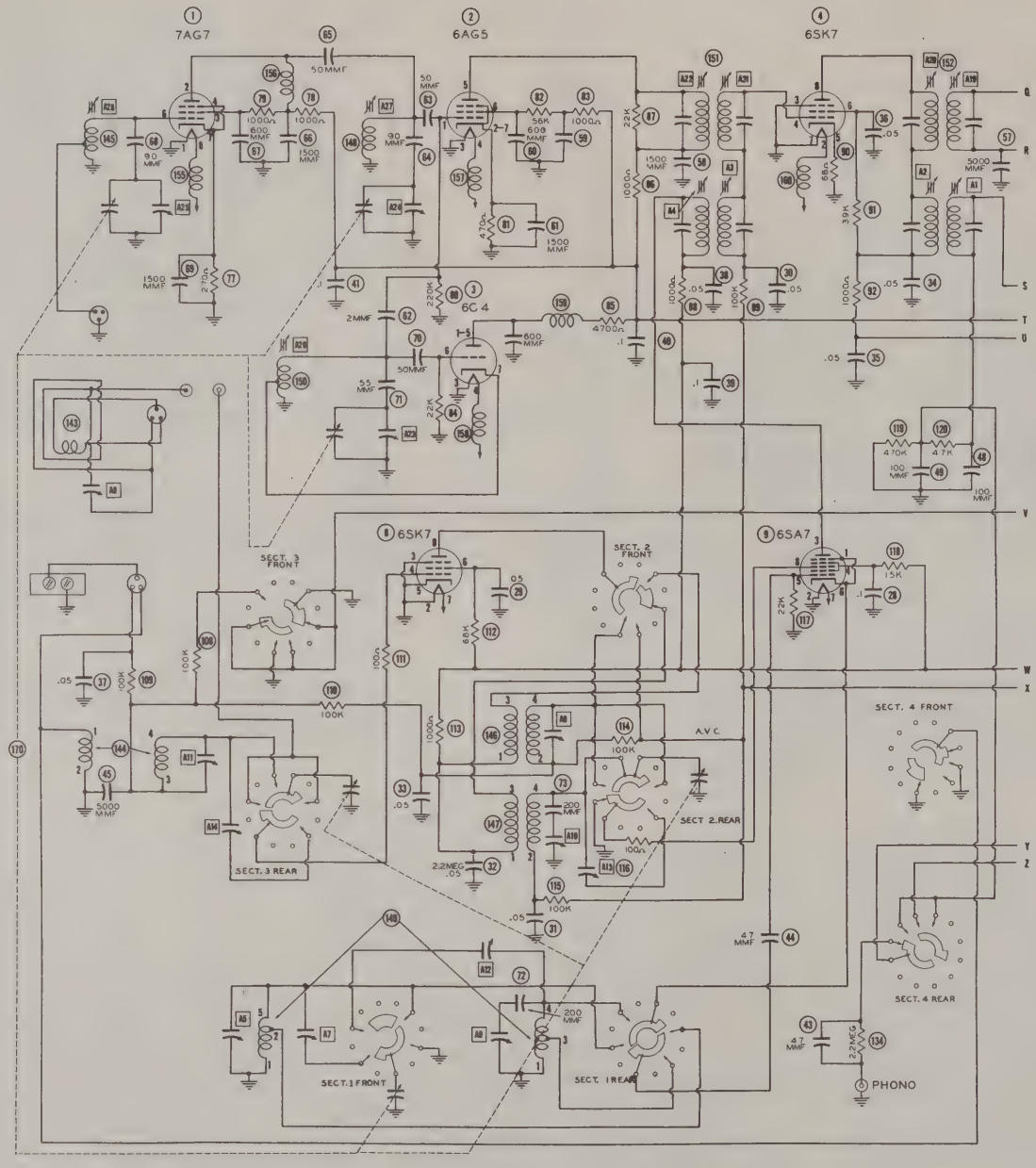
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA FARNSWORTH PART No.		INSTALLATION NOTES
164	Bayonet	6-8	0.25	Blue			Type 44
165	"	"	"	"			"
166	"	"	"	"			"
167	"	"	"	"			"

PHONO CARTRIDGE

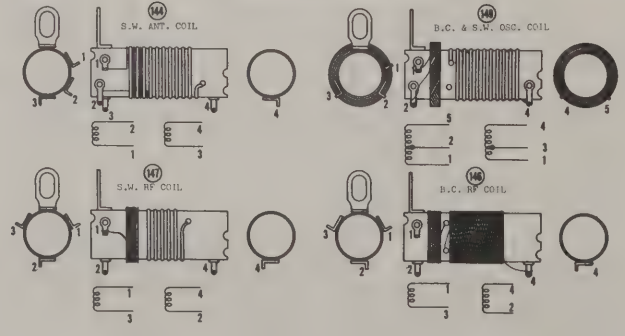
ITEM No.	REPLACEMENT DATA FARNSWORTH PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
168		L715	

MISCELLANEOUS

ITEM No.	PART NAME	FARNSWORTH PART No.	NOTES
169	Band Switch	90125	Five Section
170	Tuning Cap.	26222	12-510,12-510-13-365 MMF
A6	Trimmer Cap.	26225	BC RF Adj.
A8	Trimmer Cap.	26031	BC Ant. Adj.
	Trimmer Strip	26221	A23,A24,A25
	Trimmer Strip	26223	A5,A7,A9
	Trimmer Strip	26224	A10,A12,A13
	Trimmer Strip	26226	A11,A14
	Phono Switch	90244	
	Pointer	59254	
	Dial Glass	31334	
	SW Dial Glass	31337	
	Slider Bar	56006	
	Knob	59134	Tuning
	"	59111	Tone Control



RF AND OSCILLATOR COILS



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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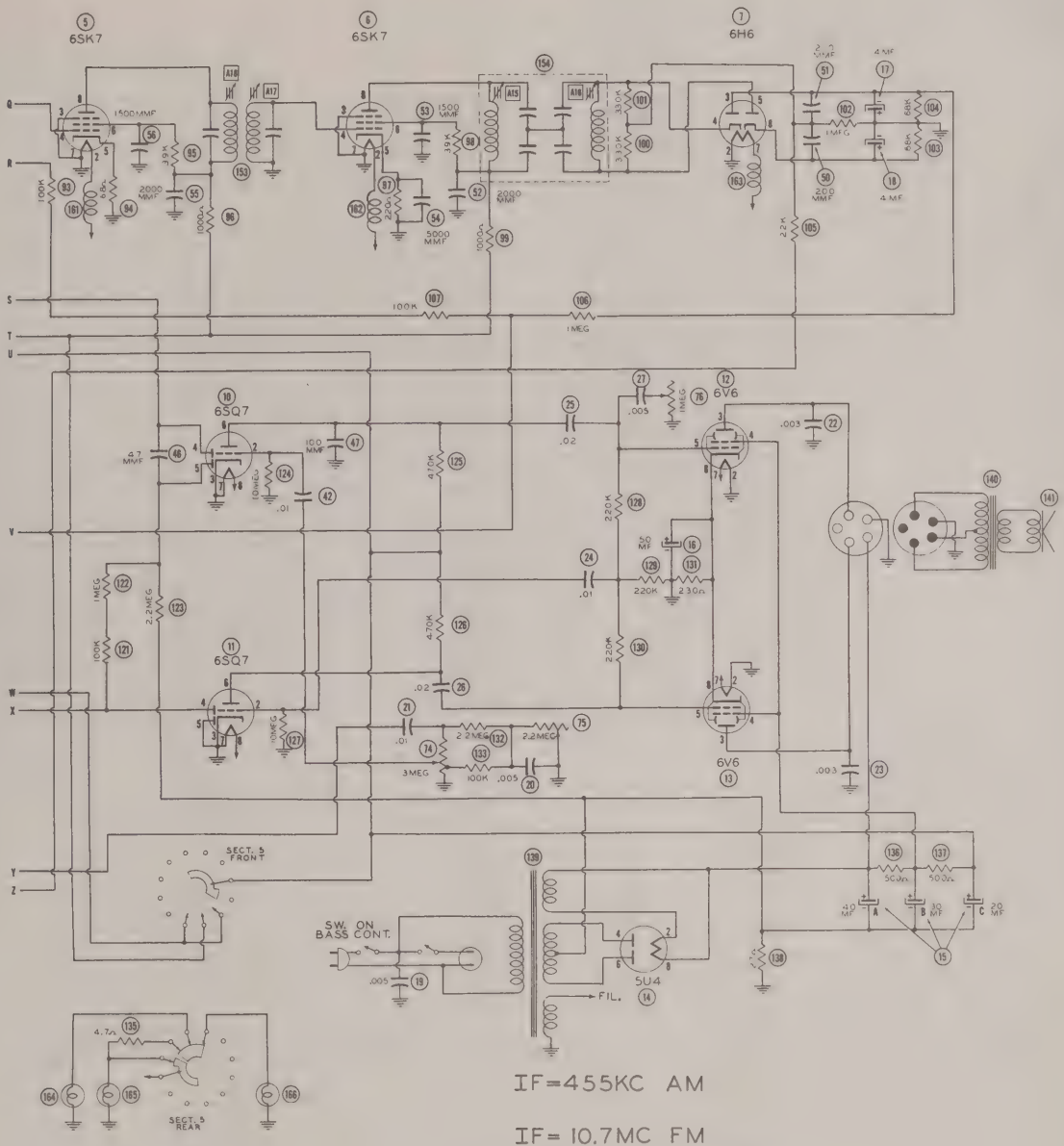
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE



IF=455KC AM

IF= 10.7MC FM

BAND SWITCH SHOWN IN EXTREME COUNTER-CLOCKWISE POSITION. (PHONO, BANDSWITCH VIEWED FROM SHAFT END.

POSITION 1-PHONO

STAGE GAIN MEASUREMENTS		
ANTENNA TO RF GRID	2X	600KC
RF GRID TO CONVERTER GRID	3X	600KC
CONVERTER GAIN	X	IN [illegible]
1st IF TRANSFORMER	.1 X	[illegible]
IF TUBE	.4 X	4[illegible]KC
2nd IF TRANSFORMER	. X	4[illegible]
AUDIO	X	4[illegible]
OUTPUT	.1 X	4[illegible]

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.

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VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	7AG7	0V.	230VDC	220VDC	5.6VDC	0V.	0V.	5.6VDC	6.4VAC
‡	2	6AG5	0V.	2.5VDC	0V.	6.4VAC	230VDC	160VDC	2.5VDC	-
‡	3	6C4	160VDC	0V.	0V.	6.4VAC	160VDC	-2VDC	0V.	-
	4	6SK7	0V.	6.4VAC	0V.	-.1VDC	1.15VDC	103VDC	0V.	265VDC
‡	5	6SK7	0V.	6.4VAC	0V.	0V.	1VDC	122VDC	0V.	215VDC
‡	6	6SK7	0V.	6.4VAC	0V.	0V.	2.4VDC	105VDC	0V.	220VDC
‡	7	6H6	0V.	0V.	-20VDC	-12VDC	4.9VDC	0V.	6.4VAC	20VDC
	8	6SK7	0V.	0V.	0V.	0V.	0V.	110VDC	6.4VAC	265VDC
	9	6SA7	0V.	0V.	265VDC	130VDC	-5.3VDC§	0V.	6.4VAC	-.1VDC
	10	6SQ7	0V.	-.35VDC	0V.	-.25VDC	-.3VDC	90VDC	0V.	6.4VAC
	11	6SQ7	0V.	-.4VDC	0V.	-.25VDC	0V.	95VDC	0V.	6.4VAC
	12	6V6GT	0V.	0V.	318VDC	300VDC	0V.	0V.	6.4VAC	17.5VDC
	13	6V6GT	0V.	0V.	318VDC	300VDC	0V.	0V.	6.4VAC	17.5VDC
	14	5U4G	0V.	325VDC	0V.	300VAC	0V.	300VAC	0V.	325VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

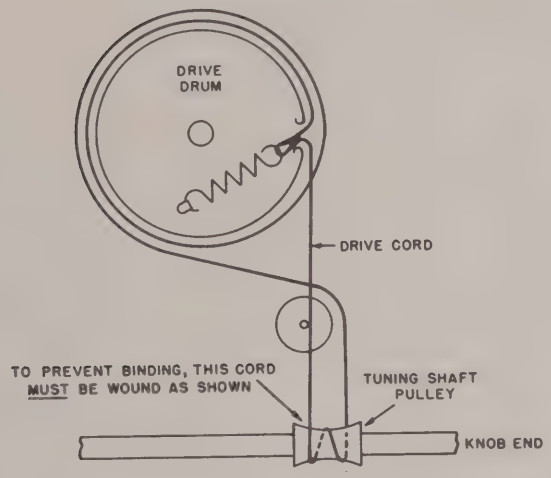
RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	7AG7	0Ω	90KΩ	90KΩ	275Ω	0Ω	0Ω	275Ω	.2Ω
‡	2	6AG5	230KΩ	400Ω	0Ω	.2Ω	90KΩ	150KΩ	400Ω	-
‡	3	6C4	90KΩ	INF.	0Ω	.2Ω	90KΩ	18KΩ	0Ω	-
	4	6SK7	0Ω	.2Ω	0Ω	3.3 Meg.	68Ω	110KΩ	0Ω	90KΩ
‡	5	6SK7	0Ω	.2Ω	0Ω	1.2 Meg.	68Ω	110KΩ	0Ω	90KΩ
‡	6	6SK7	0Ω	.2Ω	0Ω	.8Ω	200Ω	110KΩ	0Ω	90KΩ
‡	7	6H6	0Ω	0Ω	70KΩ	1.3 Meg.	1.3 Meg.	INF.	.2Ω	60KΩ
	8	6SK7	0Ω	0Ω	0Ω	3.3 Meg.	0Ω	150KΩ	.2Ω	90KΩ
	9	6SA7	0Ω	0Ω	90KΩ	110KΩ	20KΩ	.5Ω	.2Ω	3.3 Meg.
	10	6SQ7	0Ω	10 Meg.	0Ω	500KΩ	2.2 Meg.	560KΩ	0Ω	.2Ω
	11	6SQ7	0Ω	10 Meg.	0Ω	3.3 Meg.	0Ω	560KΩ	0Ω	.2Ω
	12	6V6GT	0Ω	0Ω	90KΩ	90KΩ	420KΩ	INF.	.2Ω	220Ω
	13	6V6GT	0Ω	0Ω	90KΩ	90KΩ	420KΩ	INF.	.2Ω	220Ω
	14	5U4G	INF.	90KΩ	INF.	60Ω	INF.	60Ω	INF.	90KΩ

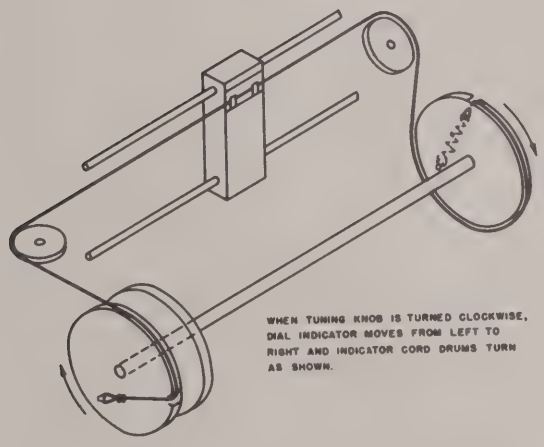
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DRIVE CORD STRINGING



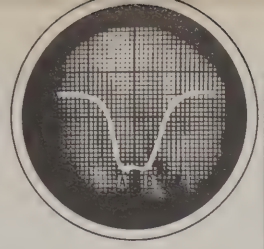
DIAL POINTER STRINGING



DISASSEMBLY INSTRUCTIONS

1. Remove five push-on type control knobs.
2. Remove two antenna plugs from built in antenna.
3. Remove four Phillips head screws holding built in antenna in cabinet. Remove from cabinet.
4. Remove two phono-compartment light plugs from chassis.
5. Remove phono-pickup plug from chassis.
6. Remove phono-motor plug from bottom of phono.
7. Remove speaker plug from chassis.
8. Remove FM antenna plug from chassis.
9. Remove three wood screws holding bottom chassis mounting board in cabinet.
10. Remove twelve Phillips head screws holding panel over top of chassis. Remove panel board and chassis out through top of cabinet.
11. Remove four screws holding chassis to panel board. Remove chassis from panel board.
12. Remove two Phillips head screws holding chassis to bottom mounting board. Remove chassis from board.

(1)



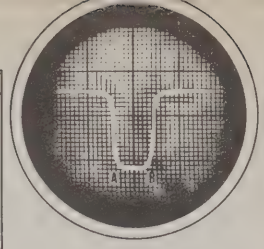
(2)

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

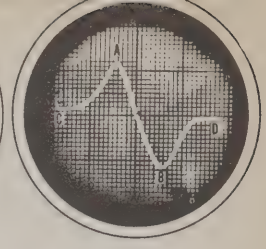
To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

RMA Dummy consists of 200 MMFD cap. in series with 20 Micro Henry Coil. This coil shunted with a 400 MMFD cap. in series with a 400Ω carbon resistor.

When using an oscilloscope for FM-IF alignment, connect the synchronized sweep voltage from the signal generator to the horizontal deflection amplifier. It is necessary that the lead to the scope be shielded and of low total capacity. The scope patterns to be strived for in alignment were obtained under ideal conditions. They should be duplicated as nearly as possible.



(3)



(4)

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) 6SA7. Low side to chassis.	455KC	BC (Second position)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	.1 MFD.	High side to extreme left stator of tuning cap. Low side to chassis.	1500KC	"	1500KC	"	A5,A6	" " " "
3	.1 MFD.	"	600KC	"	Tune for maximum output.	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2 & 3 until no further improvement can be made.
4	RMA Dummy	High side to ext. ant. terminal. Low side to chassis.	1500KC	"	"	"	A8	Adjust for maximum output.
5	400Ω	"	15MC	SW (fully clockwise)	15MC	"	A9	Adjust for maximum output. Turn signal generator to 15.91MC. The image should be heard. If it is not retune signal generator to 15MC and loosen A9 until next peak is obtained. Adjust for maximum output and recheck for image.
6	400Ω	"	"	"	Tune for maximum output.	"	A10,A11	Rock tuning cap. and adjust for maximum output.
7	400Ω	"	9.4MC	"	9.4MC	"	A12	Adjust for maximum output. Set signal generator to 10.31 MC and check for image. If image is not heard reset signal generator to 9.4MC and open A12 to next peak. Adjust for maximum output and recheck for image.
8	400Ω	"	"	"	Tune for maximum output.	"	A13,A14	Adjust for maximum output. Repeat Steps 5, 6, 7 and 8 until no further improvement can be made.
9	.1 MFD.	High side to Pin 4 (grid) of 6SK7 3rd IF Tube (6). Low side to chassis.	10.7MC (freq. modulated 150KC deviation)	FM (3rd position)	High freq. end of dial.	SCOPE CONNECT Disconnect cap. 17 from Pin 3 of 6H6. Connect scope vertical input to Pin 3 of 6H6 in series with 1 Meg resistor. Low side to chassis	A15	Shunt primary of ratio det. transformer (154) with 39KΩ. Back out A16 as far as it will turn. Adjust A15 for pattern of Figure 1. Note that in Steps 10, 11 and 12 the width of the pattern from A to B remains constant while approaching a flat top and the sides become steeper as alignment procedes.
10	.1 MFD.	High side to Pin 4 (grid) of 6SK7 2nd IF Tube (5). Low side to chassis.	"	"	"	"	A17, A18.	Adjust for flat top pattern of Figure 2.
11	.1 MFD.	High side to Pin 4 (grid) 6SK7 1st IF Tube (4). Low side to chassis.	"	"	"	"	A19,A20	Adjust for flat top pattern of Figure 3.
12	.1 MFD. in series with 10KΩ.	High side to Pin 1 (grid) 6AG5. Low side to chassis.	"	"	"	"	A21,A22	Adjust for flat top pattern of Figure 3. Reconnect cap. 17 (removed in Step 9) to Pin 3 of 6H6.
13	"	"	"	"	"	Scope vertical input connected to high side of volume control. Low side to chassis	A15,A16	Adjust for best possible duplication of pattern of figure 4. Adjust for maximum amplitude and straightness of pattern from "A" to "B" with a horizontal line from "C" to "D" crossing center of pattern from "A" to "B".
14	400Ω carbon res.	High side to high side of FM ant. socket. Low side to chassis.	107.9MC (unmodulated)	"	Channel 300	"	A23	Adjust A24 & A25 for minimum capacity. Tighten A23 for maximum capacity and then loosen until the first peak is obtained. Adjust for maximum deflection.
15	"	"	"	"	Tune for maximum output.	"	A24,A25	Adjust for maximum deflection.
16	"	"	87.9MC	"	Channel 200	"	A26,A27 A28	Adjust for maximum deflection. Repeat Steps 19, 20 and 21 until no further improvement can be made.

IF AN OSCILLOSCOPE IS NOT AVAILABLE AN ALTERNATE METHOD OF FM IF ALIGNMENT MAY BE USED AS FOLLOWS. A VTVM SHOULD BE USED AS AN OUTPUT INDICATOR.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
17	.1 MFD.	High side to Pin 4 (grid) of 6SK7 3rd IF Tube (6). Low side to chassis.	10.7MC (unmodulated)	"	"	OUTPUT METER VTVM connected to junction of resistor 105 & shielded lead going to bandswitch.	A15	Back out A16 as far as it will go. Adjust A15 for maximum deflection.
18	.1 MFD.	High side to Pin 4 (grid) 6SK7 2nd IF Tube (5). Low side to chassis.	"	"	"	"	A17,A18	Adjust for maximum deflection.
19	.1 MFD.	High side to Pin 4 (grid) 6SK7 1st IF Tube (4). Low side to chassis.	"	"	"	"	A19,A20	"
20	.1 MFD. in series with 10KΩ.	High side to Pin 1 (grid) 6AG5. Low side to chassis.	"	"	"	"	A21,A22	"
21	"	"	"	"	"	"	A16	Adjust for zero deflection. Tune signal generator 75KC above and 75KC below 10.7MC and record both readings. If these readings are not within 10% of each other, repeat Steps 14 & 18 and check again for equal deflection. It may be necessary to adjust A15 to get the readings equal. Correct adjustment of A15 & A16 is essential as misadjustment will cause distortion of FM signals.

GRANTLINE MODEL 510-A
BATTERY OPERATED

GRANTLINE MODEL 510-A
BATTERY OPERATED

GRANTLINE MODEL 510A

TRADE NAME	Grantline, Model 510A
SUPPLIER	W. T. Grant Co., 1441 Broadway, New York, N.Y.
TYPE SET	AC-DC Battery Superheterodyne, Self Contained Loop Antenna
TUBES (FIVE)	Types, 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 1A5GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC or 6 Volt"A"Supply and 90 Volt "B" Supply
RATING	.250 Amps. @ 117 V AC - 60MA @ 6V DC & 9CMA @ 90V DC
TUNING RANGE—BROADCAST	530-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn variable fully closed and set pointer at last reference mark at right end of dial. Use battery power whenever possible during alignment. However if AC power is used, connect a capacitor in series with the low side of the signal generator and chassis. The IF and Osc. adjustments may be made without connecting the loop by substituting a 1 Meg. resistor across the loop leads. When adjusting A6 have the chassis and loop mounted in the cabinet. A6 may be reached through a hole in the side of the cabinet. Set volume control at maximum volume and keep output from signal generator no higher than is necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to grid cap. of 1A7. Low side to chassis.	455KC	High freq. end. (Variable fully open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without isolation transformer reduce dummy antenna to .001 MFD. to reduce hum modulation.
2	.1 MFD.	"	1650KC	"	"	A5	"
3	200 MMF.	High side to ext. ant. clip. Low side to chassis.	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GRANTLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	1A5GT	1A5GT	6X	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GRANTLINE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	119123						◓ Filter
B	40	150							◘ "
C	200	10							Filament Bypass
D	20	50							▲ " "
7	.05	400	10013	DT4S5	TP426	S-4-05	TC-15	484-05	Line Filter
8	.002	600	10025	DT6D2	TP405	S-6-002	TC-22	684-002	3Q5 Plate Bypass
9	.01	120	100127	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
10	.1	120	100133	DT4P1	TP428	S-4-1	TC-1	484-.1	Filament Bypass
11	.006	120	100134	DT6D6	TP409	S-6-006	TC-26	484-006	Audio Coupling
12	.01	120	100127	DT4S1	TP421	S-4-01	TC-11	484-01	IF Grid Bypass
13	.25	120	100135	DT4P25	TP430	S-4-25	TC-2	484-.25	Pwr. Supp. Bypass
14	.05	200	100128	DT4S5	TP426	S-4-05	TC-15	484-05	Conv. Screen Bypass
15	.05	200	1009	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
16	100	500	1295	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Audio Plate Bypass
17	100	500	1295	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Bypass
18	10								Fixed Trimmer Cer.*

*Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GRANTLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	1 Meg.	1	101252	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

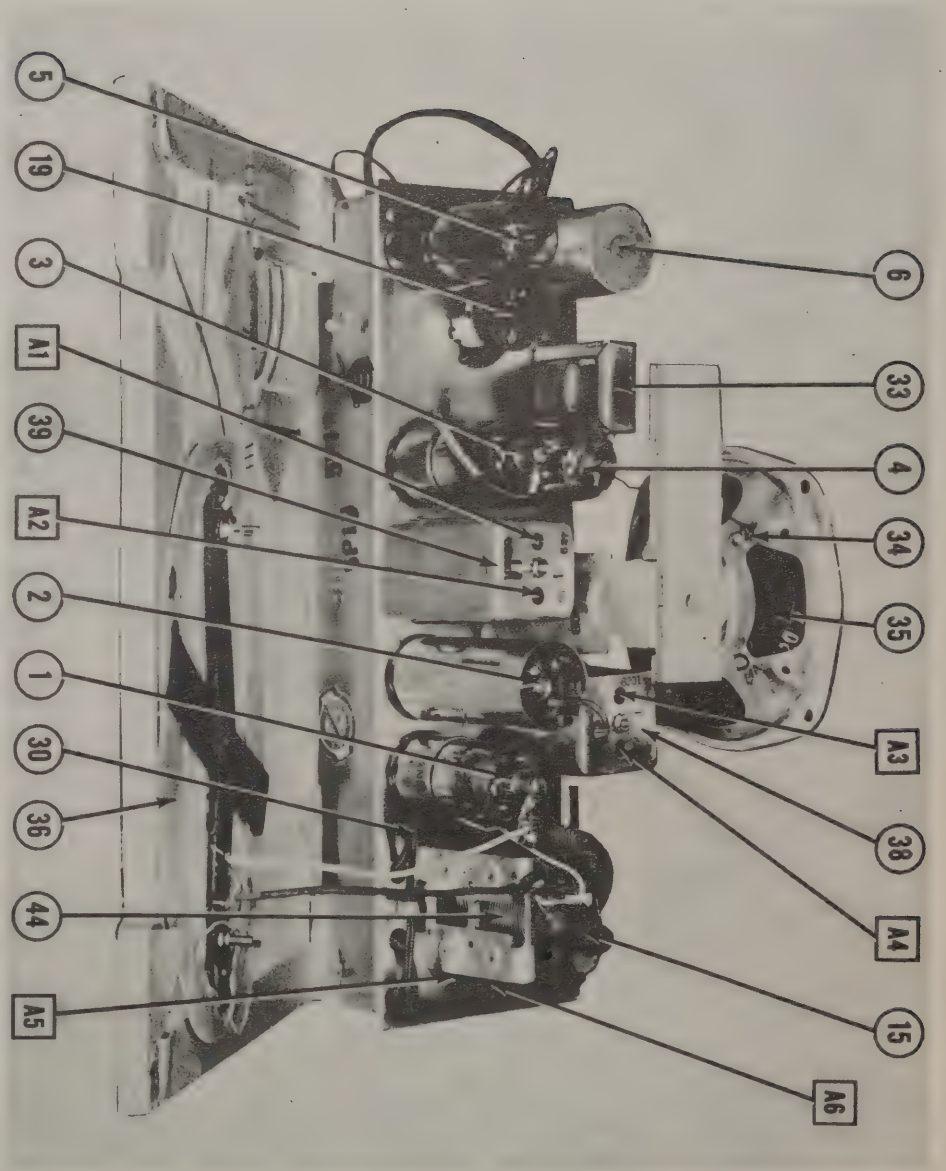
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GRANTLINE PART No.	IRC PART No.	IDENTIFICATION CODES
20	220KΩ	½	C-9B1-27	BTS-220K	Red-Red-Yl. Oscillator Grid
21	2700Ω	½	C-9B1-67	BTS-2700	Red-Vi.-Red Oscillator Plate
22	68KΩ	½	C-9B1-84	BTS-68K	Blue-Gray-Or. Converter Screen Dropping
23	15 Meg.	½	C-9B1-302	BTS-15 Meg.	Br.-Grn.-Blue IF Grid
24	1000Ω	½	C-9B1-62	BTS-1000	Br.-Blk.-Red Filament String
25	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
26	10 Meg.	½	C-9B1-37	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
27	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
28	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
29	22Ω	½	C-9B1-42	BW-½-22	Red-Red-Blk. Rectifier Ballast
30	545Ω	14	130343	DHA-750	Line Dropping-See Note 1
31	2200Ω	½	C-9B1-66	BTS-2200	Red-Red-Red Filter
32	1975Ω	6	130344	AB-2000	Filament String

Note 1-Set slider at 550Ω from one end.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: GRANTLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
33	16000Ω	3.2Ω	590Ω	.4Ω	105127	A-3496**	T22S48**	A2934 **	**Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: GRANTLINE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-107†		
34	PM	3.2Ω	114240	Mod. P5-V		†Fabricate new mounting bracket.
	CONE DIA.	VC DIA.				
35	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: GRANTLINE PART No.	MEISSNER PART No.
36	Loop Ant.	.1Ω	1.2Ω	B-13E-10250	
37	Osc. Coil	5Ω	9.5Ω	A-13D-10239	14-1040
38	Input IF	25Ω	25Ω	108201	16-6658
39	Output IF	32Ω	32Ω	108200	16-6660

DIAL LIGHT

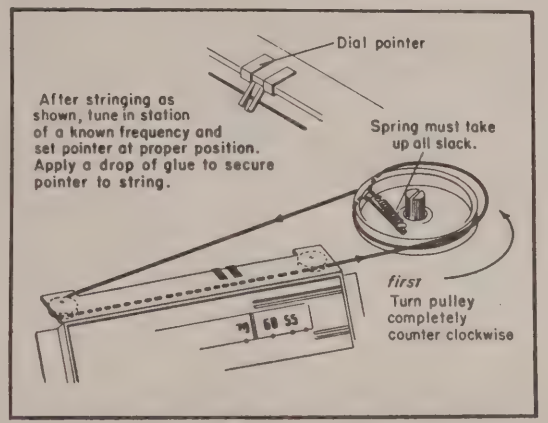
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: GRANTLINE PART No.		INSTALLATION NOTES
40	Bayonet	6-8	0.15	Brown	107249		Type 47

BATTERIES

ITEM No.	VOLTAGE	GRANTLINE PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
41	6V "A"		#744			
42	90V "B"			#738		2 Used in Series

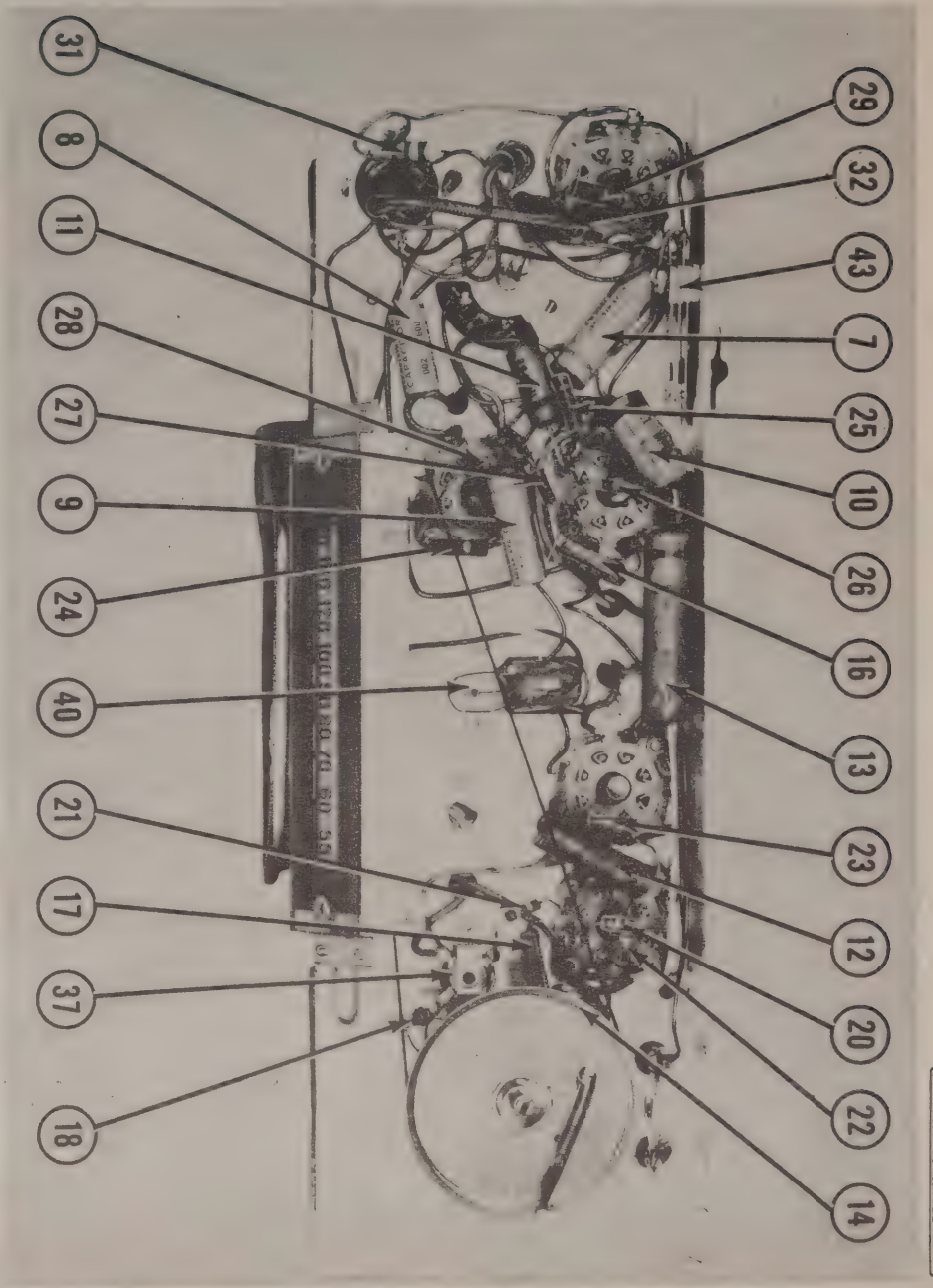
MISCELLANEOUS

ITEM No.	PART NAME	GRANTLINE PART No.	NOTES
43	Switch	125153	Line Battery
44	Tuning Cap.	B-8A-10246	2 Gang Variable Cap.


Dial pointer
After stringing as shown, tune in station of a known frequency and set pointer at proper position. Apply a drop of glue to secure pointer to string.
Spring must take up all slack.
first
Turn pulley completely counter clockwise
60 55

Replacement of Dial Pointer Drive Cord

CHASSIS—BOTTOM VIEW



GRANTLINE MODEL 510-A
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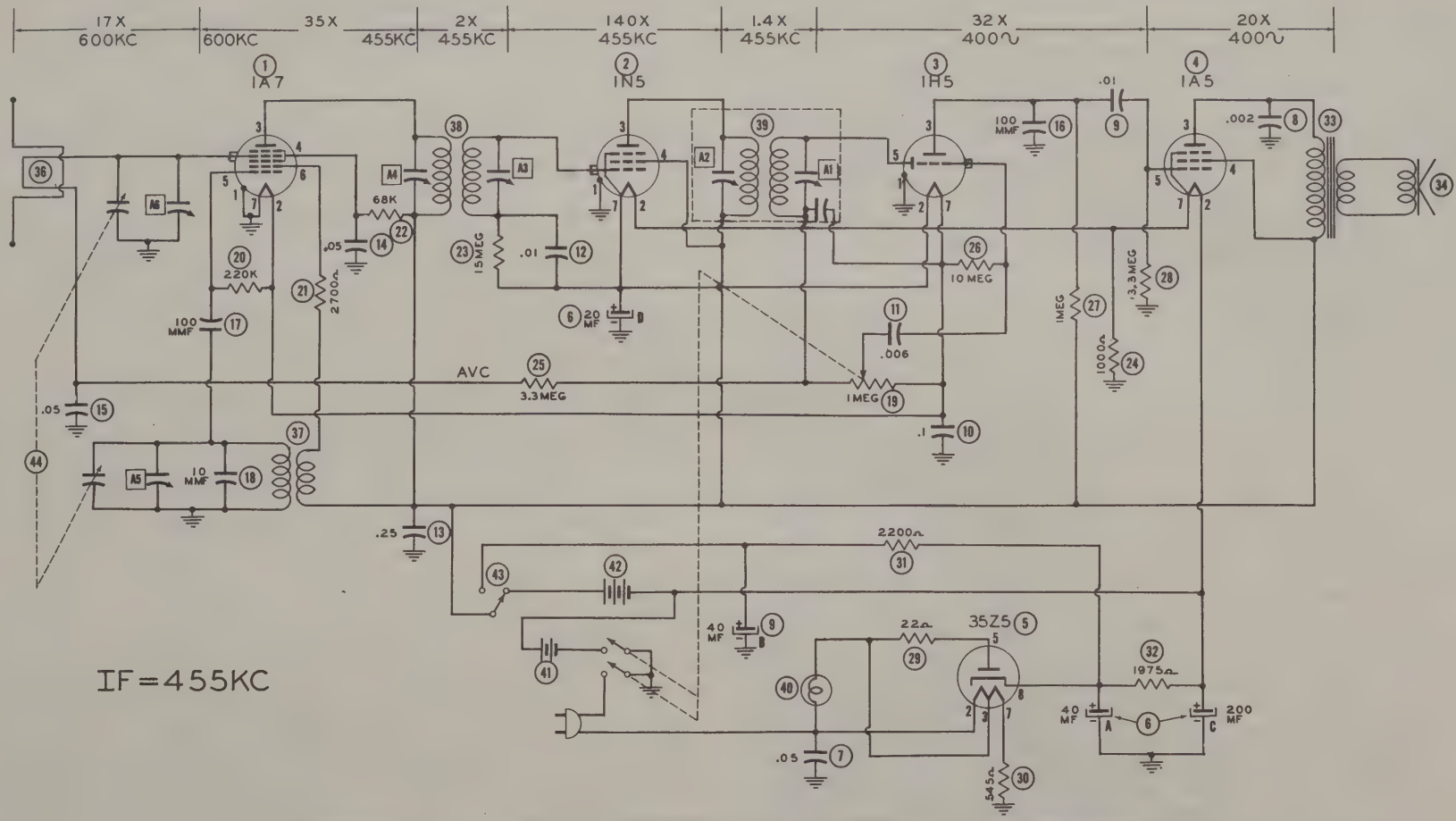

VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	1.6VDC	94VDC	43VDC	-3VDC$	87VDC	0V.	94VDC	0V.
2	1N5GT	0V.	4.6VDC	94VDC	94VDC	0V.	0V.	3.2VDC	0V.	0V.
3	1H5GT	0V.	3.2VDC	58VDC	0V.	.2VDC	0V.	1.6VDC	0V.	0V.
4	1A5GT	0V.	6VDC	92VDC	94VDC	0V.	0V.	4.6VDC	0V.	--
5	35Z5GT	0V.	117VAC	113VAC	115VDC	112VAC	0V.	87VAC	115VDC	--

$TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0Ω	*	1800Ω	70KΩ	220KΩ	4.5KΩ	*	1800Ω	4.7 MEG.
2	1N5GT	0Ω	*	1800Ω	1800Ω	INF.	INF.	*	15 MEG.	15 MEG.
3	1H5GT	0Ω	*	1 MEG.	10 MEG.	975KΩ	4.7 MEG.	*	INF.	10 MEG.
4	1A5GT	0Ω	*	4.6KΩ	4KΩ	3.2 MEG.	INF.	*	INF.	--
5	35Z5GT	0Ω	535Ω	532Ω	1800Ω	560Ω	INF.	510Ω	1800Ω	--

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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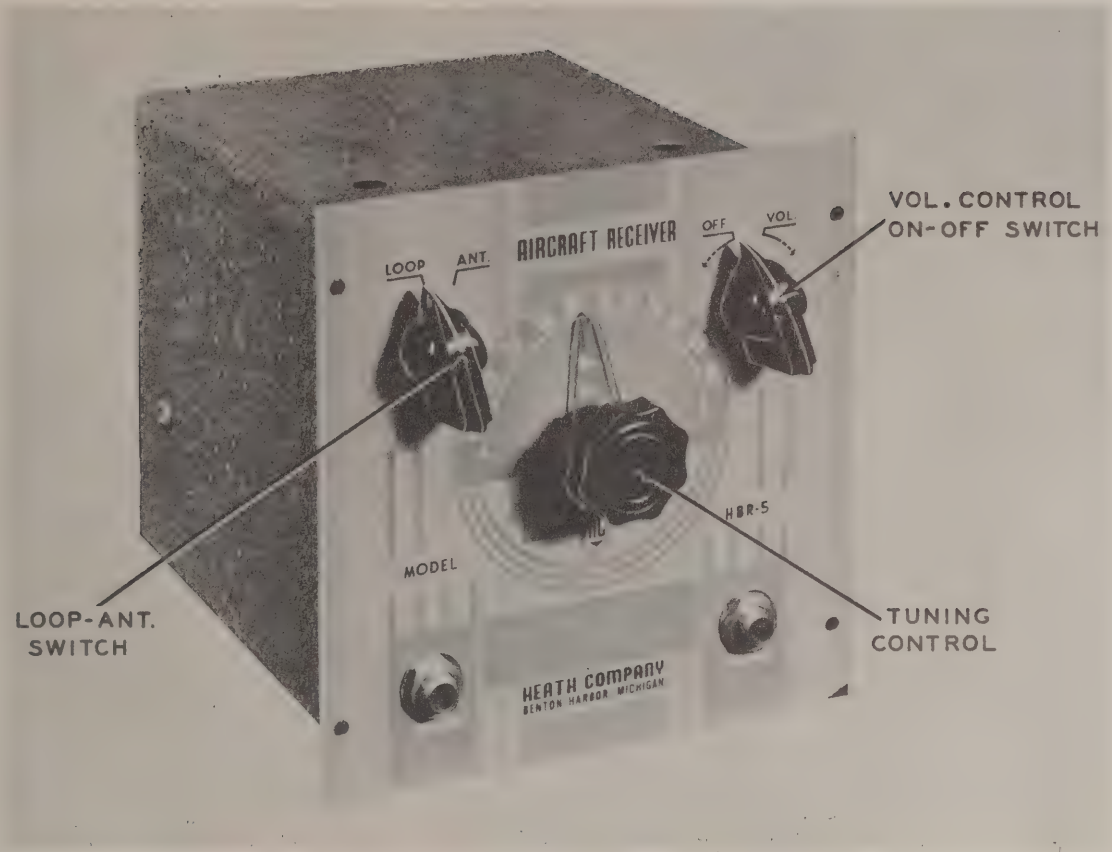
The stage gain measured values above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to chassis during stage gain measurements.

1. DC Voltage measurements are at 20,000 ohms per volt: AC voltage measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HEATH MODEL HBR-5
BATTERY OPERATED



HEATH MODEL HBR-5

TRADE NAME	Heath, Model HBR-5
MANUFACTURER	The Heath Co., Benton Harbor, Michigan
TYPE SET	Battery Operated Aircraft Beacon Superheterodyne Receiver
TUBES (FIVE)	Types, 1T4 RF Amp., 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AF, 3Q4 Power Output
POWER SUPPLY RATINGS	90 Volt "B" Supply & 1/2 Volt "A" Supply in Pack Form 16MA @ 90 Volts DC & 300 MA @ 1.5 Volts DC
TUNING RANGE—BROADCAST	190KC to 420KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) of 1T4 RF Tube (1). Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	270MMF.	High side to ant. terminal. Low side to chassis.	380KC	380KC	"	A5	" " " "
3	270MMF.	"	380KC	Tune for maximum output.	"	A6	" " " "
4	270MMF.	"	220KC	220KC	"	A7	" " " "
5	270MMF.	"	"	Tune for maximum output.	"	A8	Adjust for maximum output. Repeat Steps 2, 3, 4 & 5 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HEATH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1T4	1T4	6AR	
2	Converter	1R5	1R5	7AT	
3	IF Amp.	1T4	1T4	6AR	
4	2nd Det.-Audio	1S5	1S5	6AJ	
5	Power Output	3Q4	3Q4	7HA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HEATH PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6	.002	600		DT6D2	TP402	S-6-002	TC-25	684-002	Output Plate Bypass
7	.005	400		DT4D5	TP405	S-6-005	TC-25	684-005	Audio Coupling
8	.005	400		DT6D5	TP408	S-6-005	TC-25	684-005	AF Screen Bypass
9	.05	200		DT4S5	TP420	S-4-05	TC-15	484-05	Screen Bypass
10	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	Conv. Screen Decoup.
11	.2	150		DT4P2	TP429	S-4-2	TC-2	484-.2	Fil. Bypass
12	.2	120		DT4P2	TP429	S-4-2	TC-2	484-.2	RF Bypass Battery
13	470			5W5T5	MC241	MO.5-33	1FM-35	1468-0005	Audio Coupling
14A	250		62-13						Diode Filter
B	250								" "
15	200			5R5T2	MCB237	MOS.5-32	MS-32	1469-0002	Fixed Padder
16	47			5R5Q5	MCB225	MOS.5-45	MS-45	1469-00005	Osc. Grid Cap.
17	470			5W5T5	MC241	MO.5-35	1FM-35	1468-0005	RF Coupling
18	27			5W5T3	MC241	MO.5-33	1FM-33	1468-0003	Ant. Coil Pri. Shunt

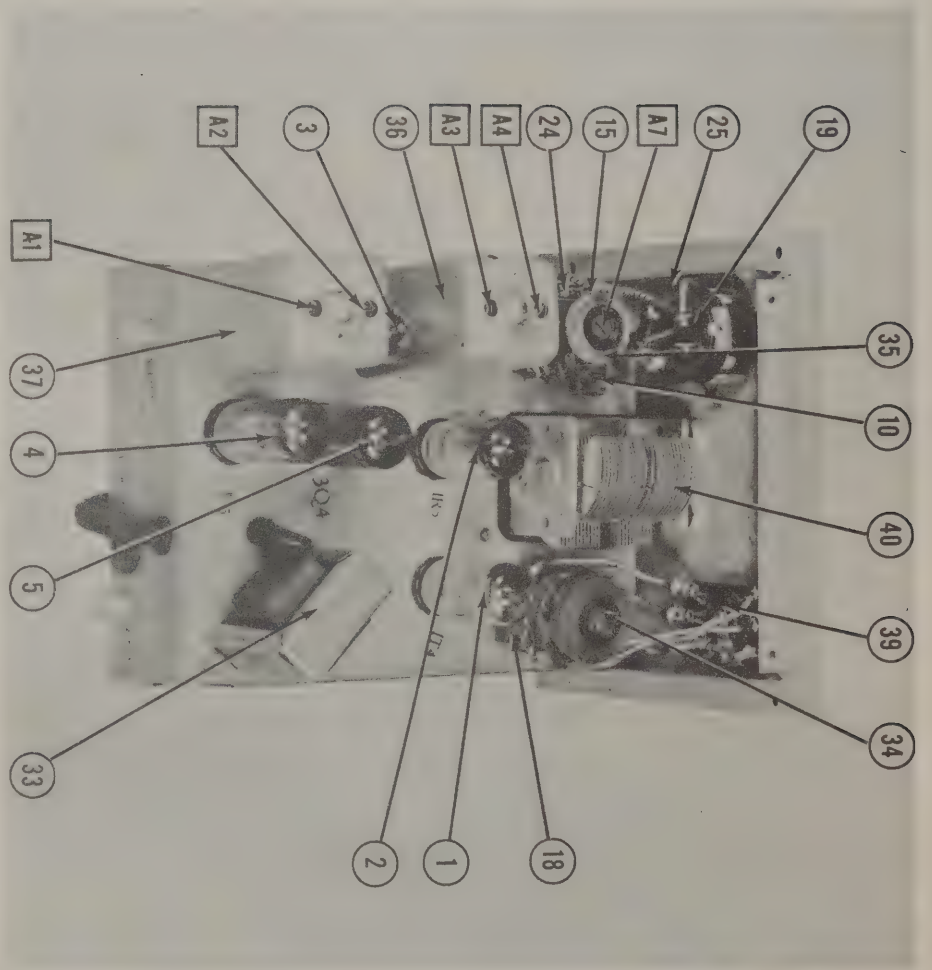
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HEATH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	100KΩ	1		MRPC	D13-12S	M-1-S	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 19A per instructions
C	Switch			MR7	42	SW-82	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HEATH PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
20	10KΩ	1/4		BTS-10K	Brown-Blk.-Orange RF Plate Load
21	33KΩ	1/4		BTS-33K	Or.-Or.-Or. Converter Grid
22	100KΩ	1/4		BTS-100K	Brn.-Blk.-Yl. Osc. Grid
23	33KΩ	1/4		BTS-33K	Or.-Or.-Or. Osc. Coil Shunt
24	10KΩ	1/4		BTS-10K	Brn.-Blk.-Orange Conv. Screen Dropping
25	10KΩ	1/4		BTS-10K	Brn.-Blk.-Orange " " "
26	100KΩ	1/4		BTS-100K	Brn.-Blk.-Yel. RF Filter
27	1 Meg.	1/4		BTS-1 Meg.	Brn.-Blk.-Grn. Diode Load
28	10 Meg.	1/4		BTS-10 Meg.	Brn.-Blk.-Blue AF Grid
29	3.3 Meg.	1/4		BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
30	1 Meg.	1/4		BTS-1 Meg.	Brn.-Blk.-Grn. AF Plate Load
31	3.3 Meg.	1/4		BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
32	470Ω	1/4		BTS-470Ω	Yl.-Vi.-Brn. Bias

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	TURNS RATIO		DC RES.		HEATH	STANCOR	THORDAR'N	MERIT	
	PRI. : SEC.		PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
33	[illegible]		[illegible]	[illegible]	[illegible]				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	HEATH PART No.	MEISSNER PART No.	
34	Ant. Coil	130Ω	11Ω 1.3Ω*	50-6		*Secondary loading coil
35	Osc. Coil	2Ω	0.5Ω	50-4		
36	Input IF	19Ω	19Ω	51-5		
37	Output IF	19Ω	19Ω	51-5		

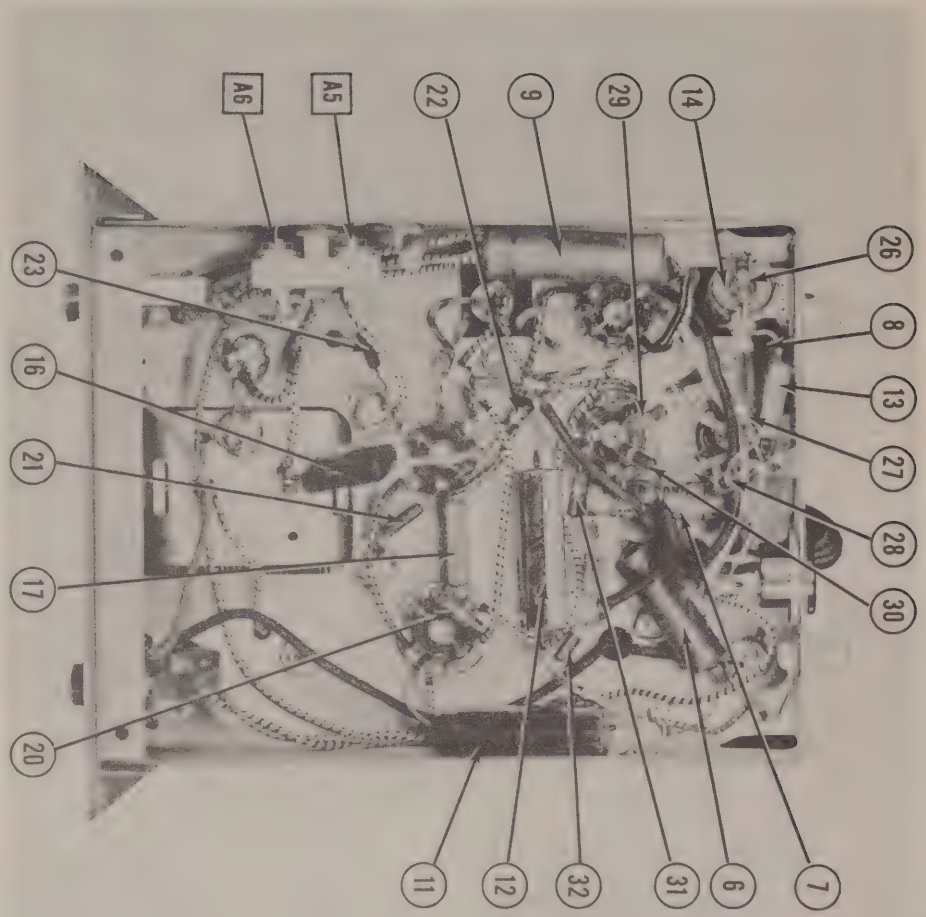
BATTERIES

ITEM No.	VOLTAGE	HEATH PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
38	1½V "A" 90V "B"	9001				

MISCELLANEOUS

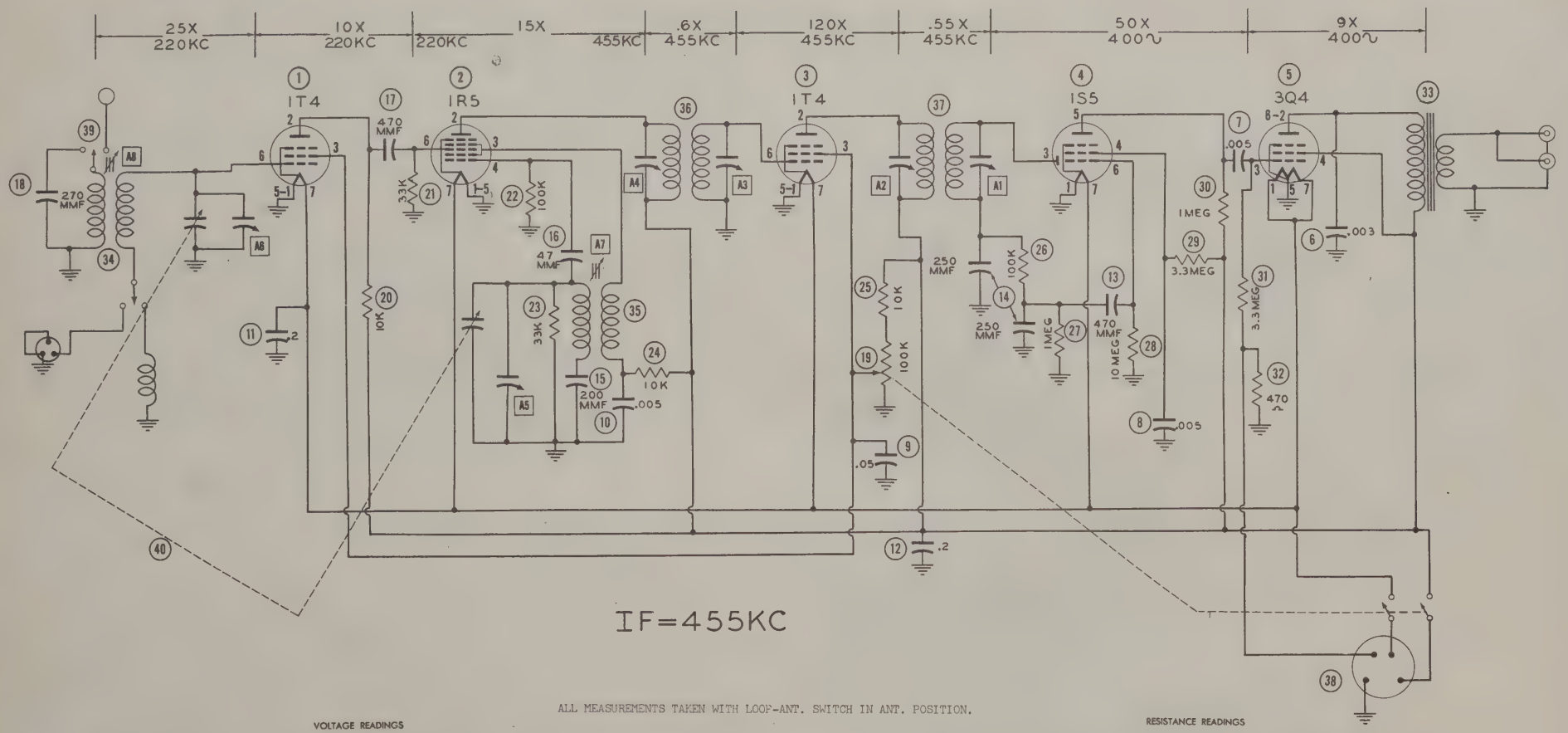
ITEM No.	PART NAME	HEATH PART No.	NOTES
39	Switch	77-1	Loop Antenna
40	2 Gang Var. Cap.	64-1	12-403 MMF (each section)
A5	Trimmer	6-1	Osc. Trimmer
A6			Ant. Trimmer
	Pointer	38-1	
	Loop Direct. Finder	9011	
	Headset	[illegible]	
	Antenna Kit	401	
	Battery Plug	92-7	With Cap.

CHASSIS—BOTTOM VIEW



HEATH MODEL HBR-5
BATTERY OPERATED

HEATH MODEL HBR-5
BATTERY OPERATED



IF=455KC

ALL MEASUREMENTS TAKEN WITH LOOP-ANT. SWITCH IN ANT. POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1T4	0V.	63VDC	63VDC	85VDC	0V.	0V.	1.5VDC
2	1R5	0V.	85VDC	63VDC	-3VDC§	0V.	0V.	1.5VDC
3	1T4	0V.	85VDC	63VDC	0V.	0V.	0V.	1.5VDC
4	1S5	0V.	0V.	-.1VDC	75VDC	72VDC	0V.	1.5VDC
5	3Q4	1.5VDC	85VDC	-3VDC	85VDC	0V.	85VDC	1.5VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1T4	*	120KΩ	100KΩ	110KΩ	*	12Ω	*
2	1R5	*	110KΩ	120KΩ	100KΩ	*	36KΩ	*
3	1T4	*	110KΩ	100KΩ	INF.	*	20Ω	*
4	1S5	*	INF.	1.2 MEG.	3.3 MEG.	1 MEG.	10 MEG.	*
5	3Q4	*	110KΩ	3.5 MEG.	110KΩ	*	110KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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4714-20

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. Volume control at maximum during stage gain measurements.

1- DC Voltage measurements are at 20,000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5- Volume control at maximum, no signal applied for voltage measurements.

MASCO MODEL MA-121

TRADE NAME	Masco, Model MA-121
MANUFACTURER	Mark Simpson Mfg. Co. Inc., 32-28 49th St., Long Island City, N.Y.
TYPE SET	AC Operated 2 Channel 5 Tube Amplifier
TUBES (FIVE)	Types, 7F7 AF Amp., 7F7 Driver & Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .610 Amps. @ 117V AC

*MEASURE 6.5AC BETWEEN FILAMENT PINS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F7	18.5VDC*	2VDC	150VDC	0V.	0V.	165VDC	2.2VDC	18.5VDC*
2	7F7	18.5VDC*	1.8VDC	150VDC	0V.	0V.	150VDC	1.7VDC	18.5VDC*
3	6V6GT	0V.	18.5VDC*	282VDC	275VDC	.2VDC	0V.	18.5VDC*	18.5VDC
4	6V6GT	0V.	18.5VDC*	282VDC	275VDC	.2VDC	0V.	18.5VDC*	18.5VDC
5	5Y3GT	0V.	390VDC	0V.	330VAC	0V.	330VAC	0V.	390VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F7	240Ω	5KΩ	370KΩ	540KΩ	560KΩ	320KΩ	4500Ω	240Ω
2	7F7	240Ω	2000Ω	300KΩ	8KΩ	140KΩ	300KΩ	1800Ω	240Ω
3	6V6GT	INF.	240Ω	200KΩ	200KΩ	110KΩ	INF.	240Ω	240Ω
4	6V6GT	INF.	240Ω	200KΩ	200KΩ	100KΩ	INF.	240Ω	240Ω
5	5Y3GT	INF.	200KΩ	INF.	90Ω	INF.	95Ω	INF.	200KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

MASCO MODEL MA-121

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
1	AF Amp.	7F7	7F7	8AC	
2	Driver & Phase Inv.	7F7	7F7	8AC	
3	Power Output	6V6GT	6V6GT	7AC	
4	Power Output	6V6GT	6V6GT	7AC	
5	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MASCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6	8	600		KR608	HS693	D-8-600	AP-86	GL600-8	Filter
7A	8	450		BRL8845	2N518	M-2x8-450	UT-88	PRS450-8-8	"
B	8	450							"
8	8	450		BR845	TC71	M-8-450	UT-8	PRS450-8	"
9A	8	450		BRL8845	2N518	M-2x8-450	UT-88	PRS450-8-8	"
B	8	450							"
10	50	50		BR505	TC39	M-50-50	TA-550	PRS50-50	Cath. Bypass
11	10	50		BR105	TC32	M-10-50	TA-510	PRS50-10	" "
12	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Audio Coupling
13	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	" "
14	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	" "
15	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	" "
16	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
17	.001	600		DT6D1	TP404	S-6-001	TC-21	684-001	Cath. Bypass
18	500	500		5W5T5	MC245	MO.5-35	1FM-35	1468-0005	Tone Compensation
19	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "

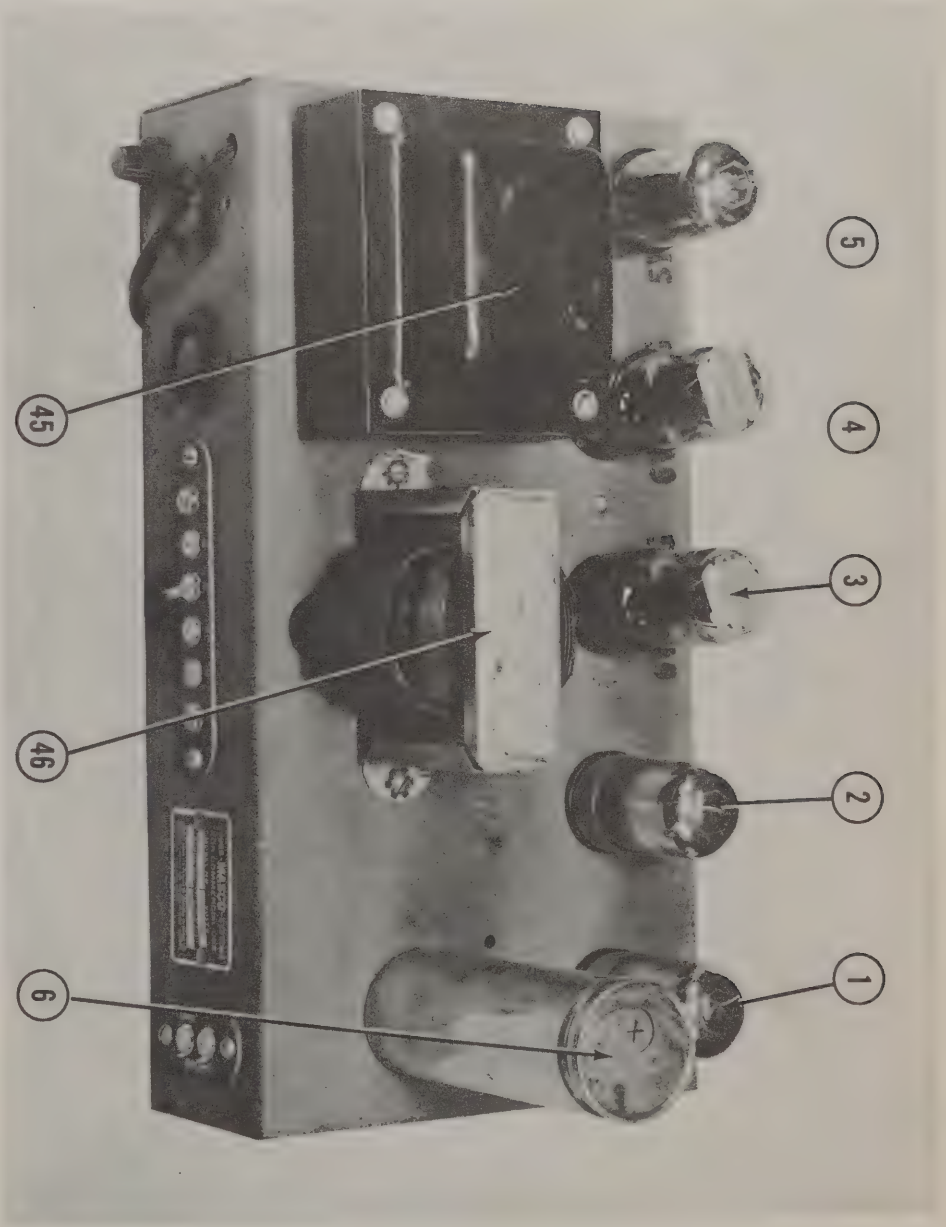
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST-ANCE	WATTS	MASCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
20A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 20A per instructions
21A	500KΩ	1		MRT-430	D13-133X	T-78	Treble Control
B	Shaft			Not Req.	A	Not Req.	Attach to 21A per instructions
22A	500KΩ	1		MR48	D13-133	M-60-Z	Bass Control
B	Shaft			Not Req.	A	Not Req.	Attach to 22A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
23	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn. Series Phono.
24	5000Ω	½		BTS-4700	Grn.-Blk.-Red 1st AF Cathode
25	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 1st AF Plate Load
26	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Series 2nd AF Grid
27	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Tone Compensation
28	5000Ω	½		BTS-4700	Grn.-Blk.-Red 2nd AF Cathode
29	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd AF Plate Load

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
30	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Filter
31	27KΩ	½		BTS-27K	Red-Vi.-Or. "
32	27KΩ	½		BTS-27K	Red-Vi.-Or. "
33	2200Ω	½		BTS-2200	Red-Red-Red Driver Cathode
34	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Driver Plate Load
35	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
36	2200Ω	½		BTS-2200	Red-Red-Red Phase Inverter Cathode
37	8200Ω	½		BTS-8200	Gray-Red-Red-Phase Inverter Grid
38	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Output Grid
39	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Output Grid
40	250Ω	10		AB-250	Output Cathode
41	10KΩ	½		BTS-10K	Br.-Blk.-Or. Filter
42	10KΩ	½		BTS-10K	Br.-Blk.-Or. Filter
43	200Ω	10		AB-200	"
44	18KΩ	½		BTS-18K	Br.-Gray-Or. Feedback

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
45	117V AC @ .61A	660V CT @ .08A	5.2V AC @ 2.0A	6.5V AC @ 1.6A	A-12D	P-6013	T22R02	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
46	6200Ω CT	2Ω 4Ω 8Ω 15Ω 500Ω	100Ω CT	.25Ω .3Ω, .35Ω .5Ω 22Ω	0-17	A-3830*	T22S68*		*Drill new mounting holes.

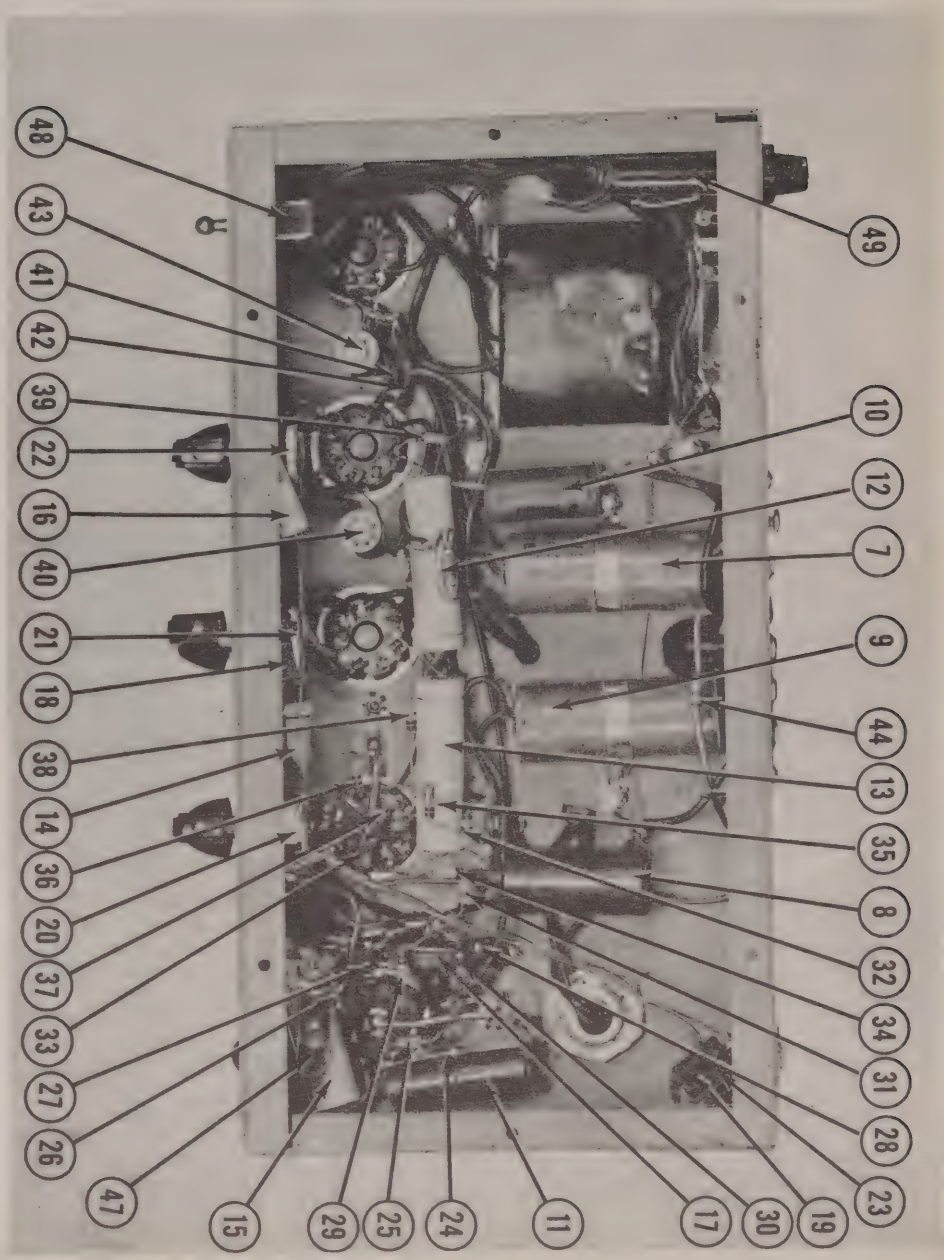
DIAL LIGHT

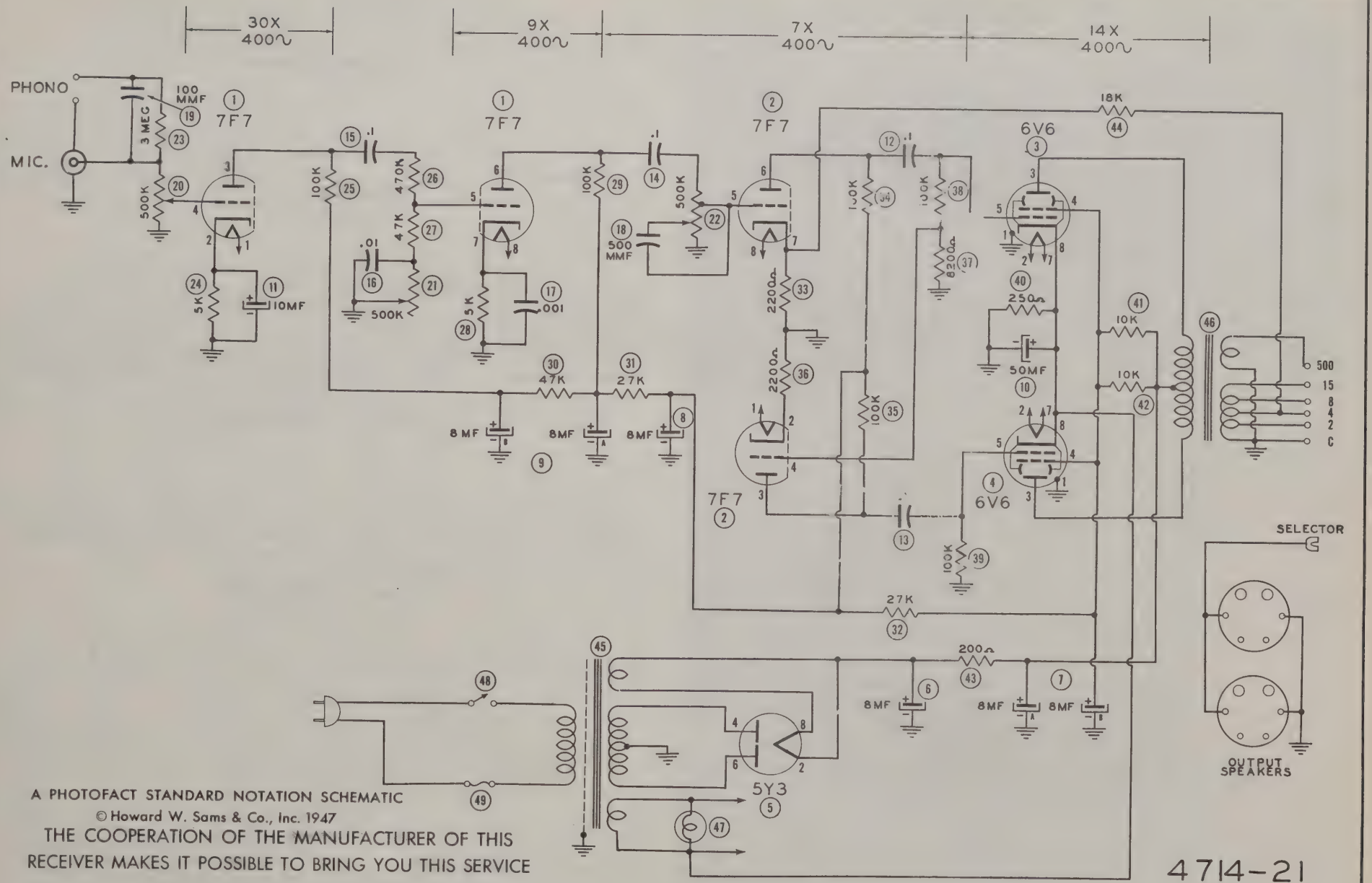
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MASCO PART No.		
47	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
48	Switch		Power SPST
49	Fuse		3 Amp.

CHASSIS—BOTTOM VIEW





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THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4714-21

MAYFAIR MODELS
550, 550W

MAYFAIR MODELS
550, 550W

MAYFAIR MODEL 550

TRADE NAME	Mayfair, Models 550, 550W
MANUFACTURER	Radiaphone Corp., 1142 S. Wall St., Los Angeles 15, Calif.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC only
TUNING RANGE—BROADCAST	545-1735KC RATING .250 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to stator of rear section of tuning capacitor. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1735KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output. With tuning capacitor at this setting, place chassis in cabinet and slide the dial pointer to the 1500KC dial mark with a long rod or screwdriver.

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PARTS LIST AND DESCRIPTIONS

MAYFAIR MODELS 650, 650W

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MAYFAIR PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MAYFAIR PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	40	150	34022	BRD4415	TCD48	DSB-2x40-150	TA-440	PRSA150-40-40	Filter - Red
B	40	150							" "
7	.02	400	35049	DT4S2	TP423	MPW-6-02	TC-12	484-02	Line Filter
8	.1	200	35053	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
9	.02	400	35049	DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
10	.02	400	35049	DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
11	.005	600	35045	DT6D5	TP408	S-6-005	TC-25	684-005	" "
12	.05	200	35048	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
13	250	500	31051	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	AF Plate Bypass
14	250	500	31051	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Diode Filter
15	250	500	31051	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	RF Coupling
16	50	500	31006	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Cap.
17	100	500	33017	5R5T1	MCE235	MOS.5-31	MS-31	1469-0001	IF Fixed Trimmer (Pri)
18	100	500	33017	5R5T1	MCE235	MOS.5-31	MS-31	1469-0001	" " " (Sec.)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MAYFAIR PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
19A	500KΩ	1	64017	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 19A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

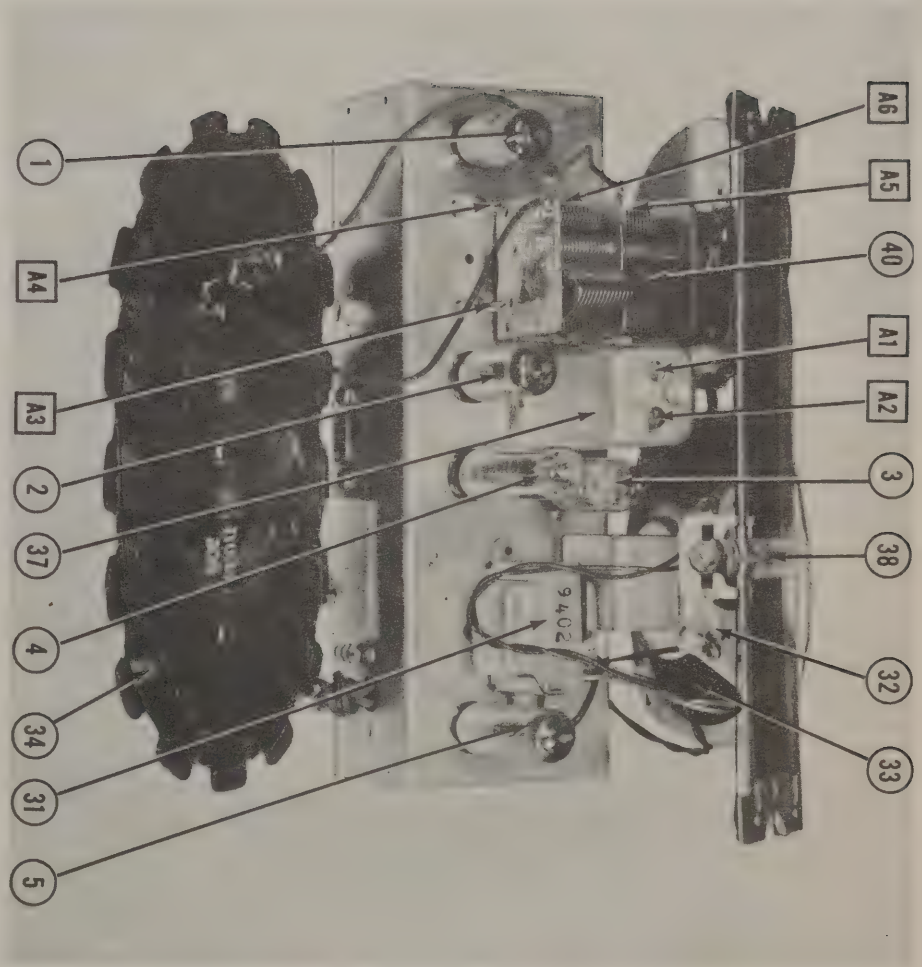
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MAYFAIR PART No.	IRC PART No.	
20	22KΩ	½	91369	BTS-22K	Red-Red-Or. Oscillator Grid
21	1 Meg.	½	91408	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
22	150Ω	½	91339	BW-½-150	Br.-Grn.-Br. IF Cathode
23	2.2 Meg.	½	91403	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
24	1 Meg.	½	91408	BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
25	4.7 Meg.	½	91401	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
26	220KΩ	½	91370	BTS-220K	Red-Red-Yl. AF Plate Load
27	330KΩ	½	91402	BTS-330K	Or.-Or.-Yl. Output Grid
28	150Ω	½	91339	BW-½-150	Br.-Grn.-Br. Output Cathode
29	390Ω	2	91372	BW-2-390	Or.-White-Br. Filter
30	22Ω	1	91409	BW-1-22	Red-Red-Blk. Surge Limiter

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAYFAIR PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
31	3200Ω	3.6Ω	165Ω	.6Ω	94021	A-3876	T22845	A-2928	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MAYFAIR PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-113†		†Use adaptor sub-baffle
32	PM	3.6Ω	73009	Mod. P4-X		
	CONE DIA.	VC DIA.				
33	4½"	½"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT.			

R F COILS

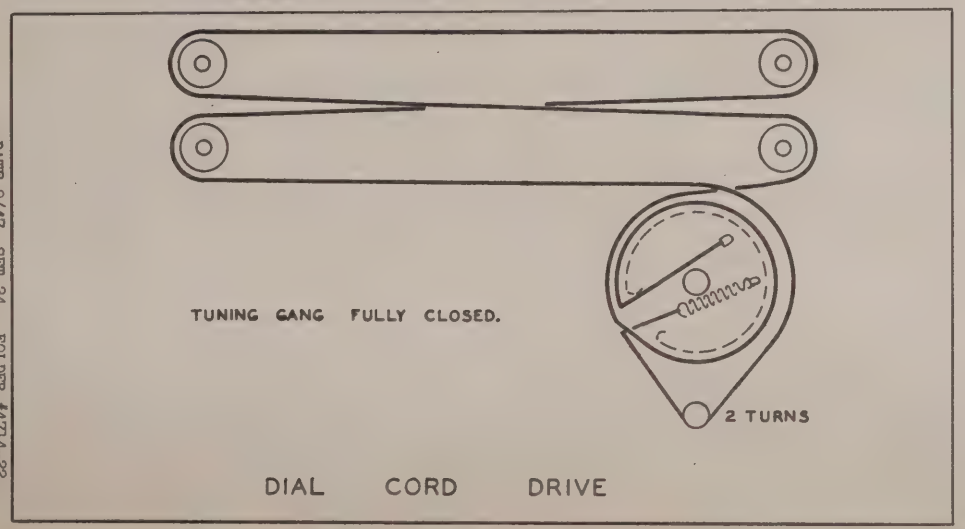
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MAYFAIR PART No.	MEISSNER PART No.
34	Loop Ant.	0Ω	1Ω	11005	
35	Osc. Coil	1Ω	6Ω	30011	14-1040
36	Input IF	18Ω	18Ω	94023	
37	Output IF	30Ω	30Ω	94024	16-6660

DIAL LIGHT

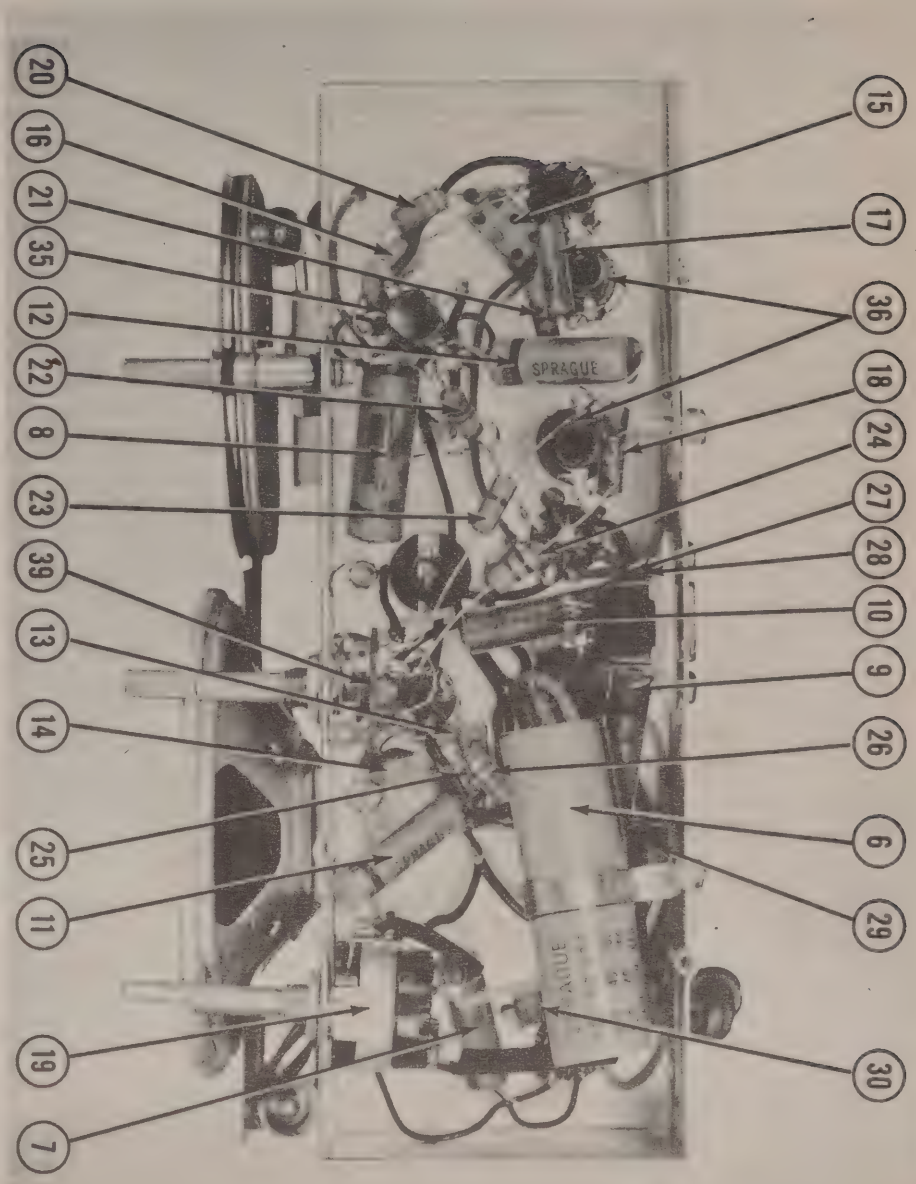
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MAYFAIR PART No.		INSTALLATION NOTES
38	Bayonet	6-8	0.15	Brown	53001		Type 47

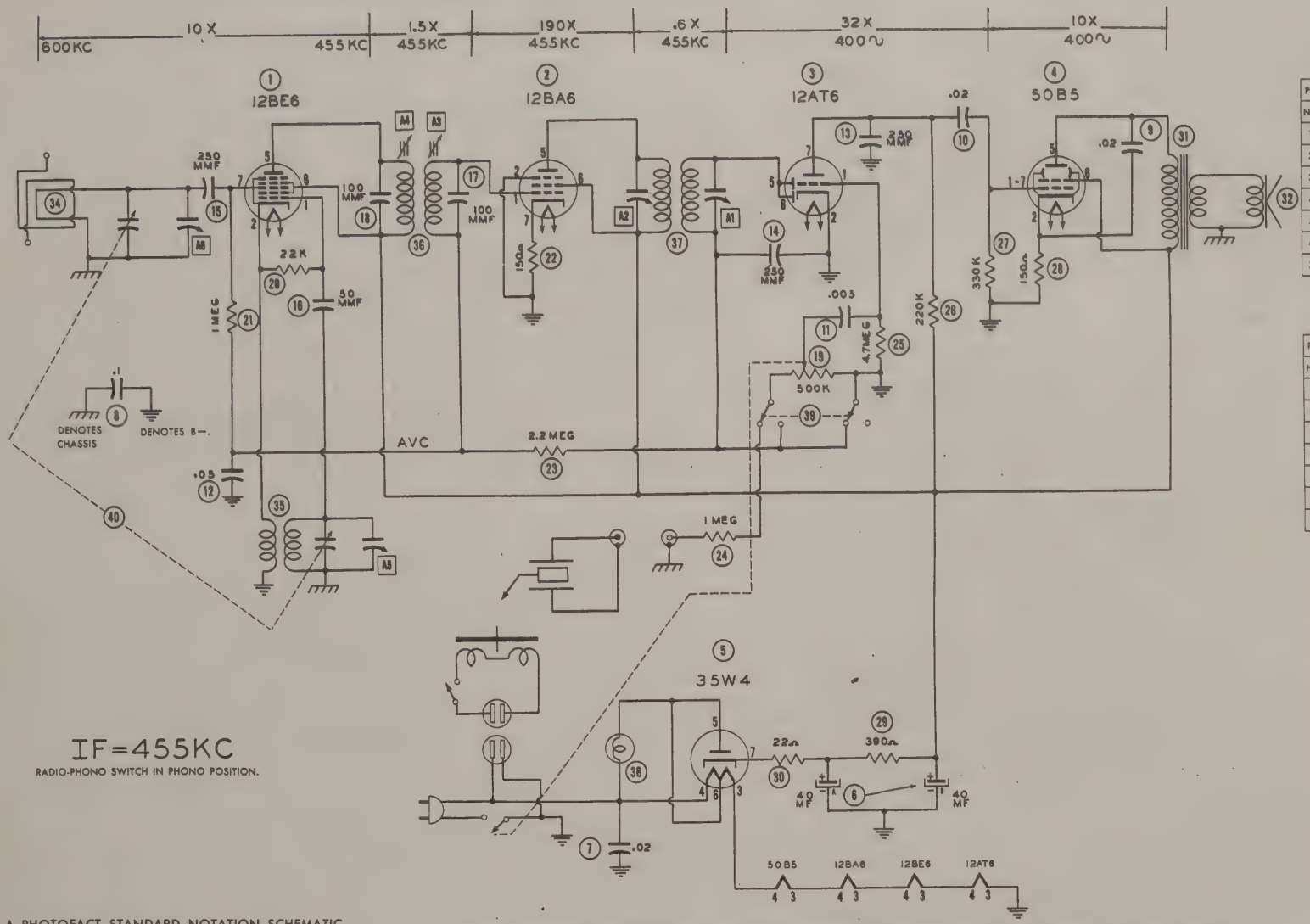
MISCELLANEOUS

ITEM No.	PART NAME	MAYFAIR PART No.	NOTES
39	Switch	18136	Radio-Phono
40	2 Gang Var. Cap	38028	17-448 MMF, 27-195 MMF
	Switch	18133	Phono Motor
	Dial Pointer	41097	
	Dial Glass	41094	
	Phono Motor	70001	



CHASSIS—BOTTOM VIEW





RADIO-PHONO SWITCH IN RADIO POSITION.

Pin No.	12BE6 Volt.	12BE6 Res.	12BA6 Volt.	12BA6 Res.
1	-8VDC§	25KΩ	0V.	3 MEG.
2	0V.	.5Ω	0V.	0Ω
3	12VAC	12Ω	24VAC	24Ω
4	24VAC	24Ω	36VAC	35Ω
5	94VDC	50KΩ	94VDC	50KΩ
6	94VDC	50KΩ	94VDC	50KΩ
7	0V.	4 MEG.	1.7VDC	150Ω

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin No.	12AT6 Volt.	12AT6 Res.	50B5 Volt.	50B5 Res.
1	-.2VDC	5 MEG.	0V.	300KΩ
2	0V.	0Ω	5.5VDC	130Ω
3	0V.	0Ω	36VAC	35Ω
4	12VAC	12Ω	85VAC	85Ω
5	-.4VDC	460KΩ	88VDC	50KΩ
6	-.4VDC	460KΩ	94VDC	50KΩ
7	52VDC	270KΩ	0V.	300KΩ

Pin No.	35W4 Volt.	35W4 Res.
1	118VDC	50KΩ
2	117VAC	115Ω
3	85VAC	85Ω
4	117VAC	115Ω
5	113VAC	110Ω
6	113VAC	110Ω
7	120VDC	50KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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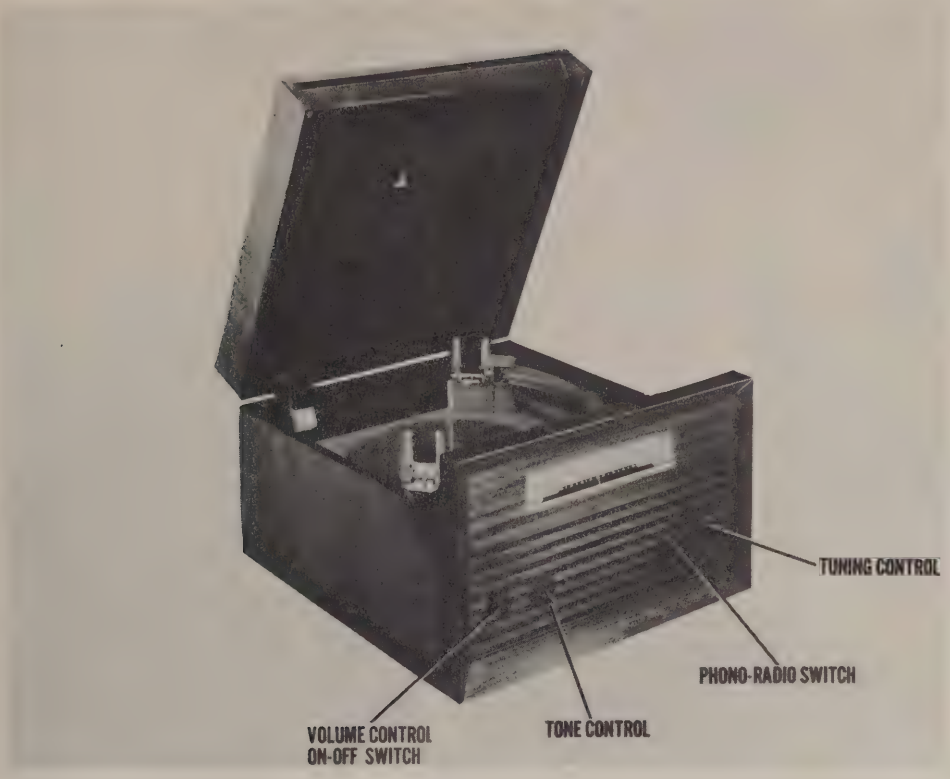
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MONITOR
MODEL RA-50



MONITOR
MODEL RA-50

MONITOR MODEL RA-50

TRADE NAME	Monitor, Model RA-50
MANUFACTURER	Monitor Equipment Corp., 110 E. 42nd St., New York, N.Y.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne with Loop Antenna
TUBES (FIVE)	12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING .230 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer at the small dot to the left of the last calibration mark.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1		Loop	456KC	Tuning cap. fully closed.	Across voice coil	A1,A2, A3,A4.	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2		Loop	1400KC	1400KC	"	A5	Adjust for maximum output.
3		Loop	"	"	"	A6	" " " "

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove four wood screws holding panel in rear of chassis.
3. Remove four wood screws holding record changer in cabinet.
4. Disconnect phono-motor plug and phono-pickup plug from chassis.
5. Remove staple holding loop antenna in cabinet.
6. Remove two Phillips head screws holding chassis in cabinet.
7. Remove one wood screw from above speaker. Remove chassis from cabinet.

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PARTS LIST AND DESCRIPTIONS

MONITOR
MODEL RA-50

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MONITOR PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MONITOR PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	CD-1226	BRD4415	2N511	DSB-2x40-150	TA-430	PRSA150-40-	Filter - Red
B	30	150						30	" - Green
7	10	25	CD-1224	BR102A	TC22	M-10-25	TA-10	PRS25-10	Cathode Bypass
8	.05	400	CD-1227-13	DT4S5	TP426	MPH-4-05	TC-15	484-05	Line Filter
9	.01	400	CD-1227-8	DT4S1	TP421	S-4-01	TC-11	484-01	Output Plate Bypass
10	.0015	400	CD-1227-2	DT6D2	TP405	S-6-002	TC-22	484-002	Tone Compensation
11	.02	400	CD-1227-10	DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
12	.002	400	CD-1227-3	DT6D2	TP405	S-6-002	TC-22	484-002	Audio Coupling
13	.05	400	CD-1227-13	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
14	.5	400	CD-1227-19	DT4P5	TP431	SDH-4-5	TC-5	484-.5	Line Isolation
15	250	500	CD-1071-28	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Diode Filter
16	100	500	CD-1071-22	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MONITOR PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	½	RE-1164	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
18A	250KΩ	½	RE-1165	MR44	D13-130	M-64-Z	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 18A per instructions

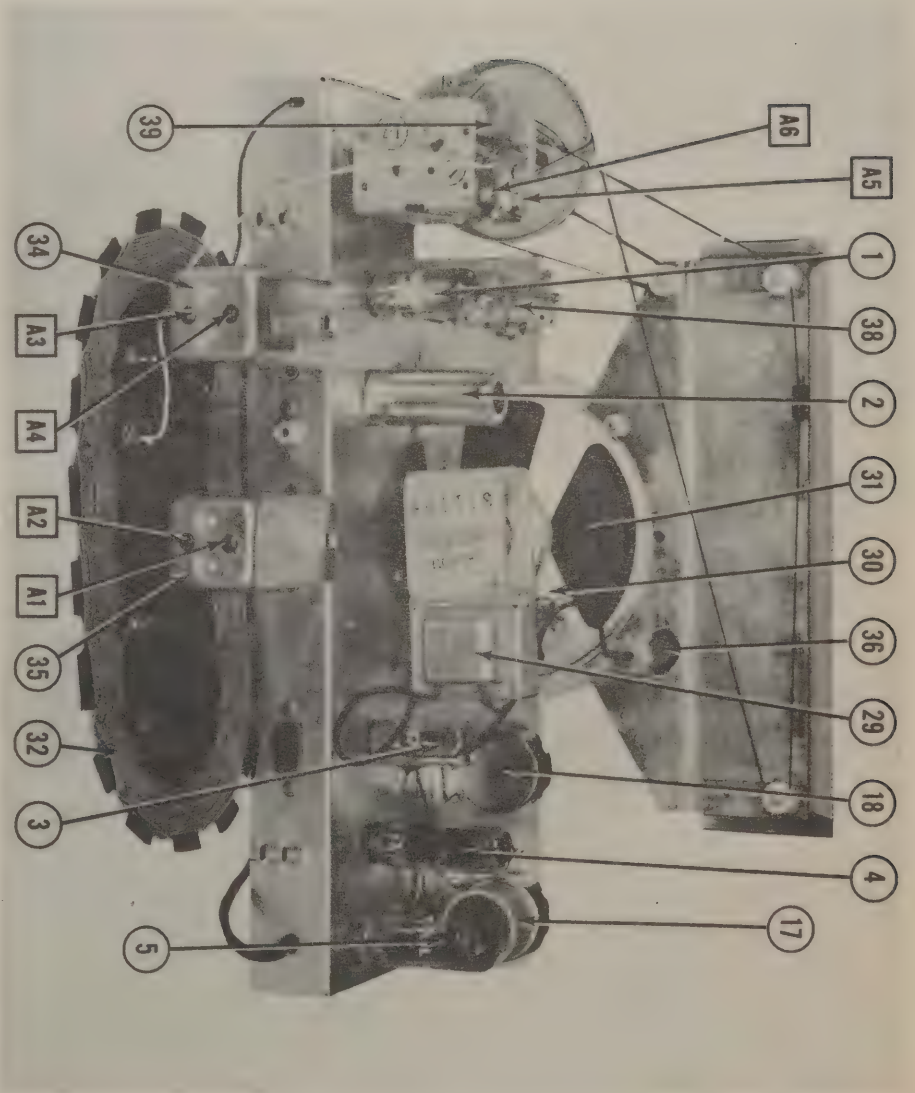
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MONITOR PART No.	IRC PART No.	IDENTIFICATION CODES
19	20KΩ	½	RE-1166-206	BTS-22K	Red-Blk.-Or. Oscillator Grid
20	15 Meg.	½	RE-1166-159	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
21	3 Meg.	½	RE-1166-308	BTS-3.3 Meg.	Or.-Blk.-Grn. " "
22	51KΩ	½	RE-1166-516	BTS-47K	Grn.-Br.-Or. RF Filter
23	15 Meg.	½	RE-1166-159	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
24	510KΩ	½	RE-1166-507	BTS-470K	Grn.-Br.-Yl. AF Plate Load
25	510KΩ	½	RE-1166-507	BTS-470K	Grn.-Br.-Yl. Output Grid
26	150Ω	½	RE-1003-154	BW-½-150	Br.-Grn.-Br. Output Cathode
27	2200Ω	1	RE-1168-225	BTA-2200	Red-Red-Red Filter
28	15Ω	1	RE-1169	BW-1-15	Br.-Grn.-Blk. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MONITOR PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
29	2400Ω	3.2Ω	200Ω	.6Ω	Part of SK-1011	A-3876*	T22S45*	A-2928*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MONITOR PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
30	PM	3.2Ω	SK-1011	Mod. P5-X		
	CONE DIA.	VC DIA.				
31	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MONITOR PART No.	REPLACEMENT DATA: MEISSNER PART No.
32	Loop Ant.	0Ω	1.3Ω	AT-1018	
33	Osc. Coil		7Ω	CI-1049	14-1040
34	Input IF	18.5Ω	20Ω	TR-1052	16-6658
35	Output IF	27Ω	27Ω	TR-1051	16-6660

DIAL LIGHT

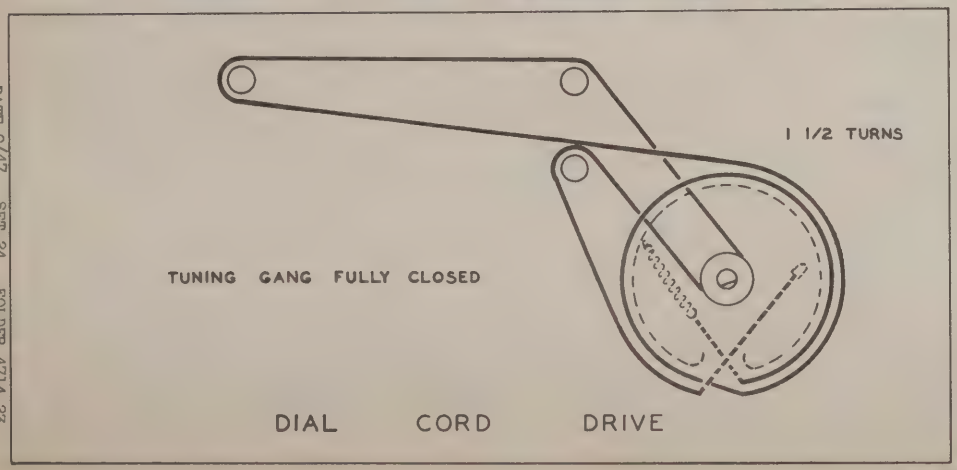
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MONITOR PART No.		INSTALLATION NOTES
36	Bayonet	6-8	0.15	Brown	LA-1014-32		Type 47

PHONO CARTRIDGE

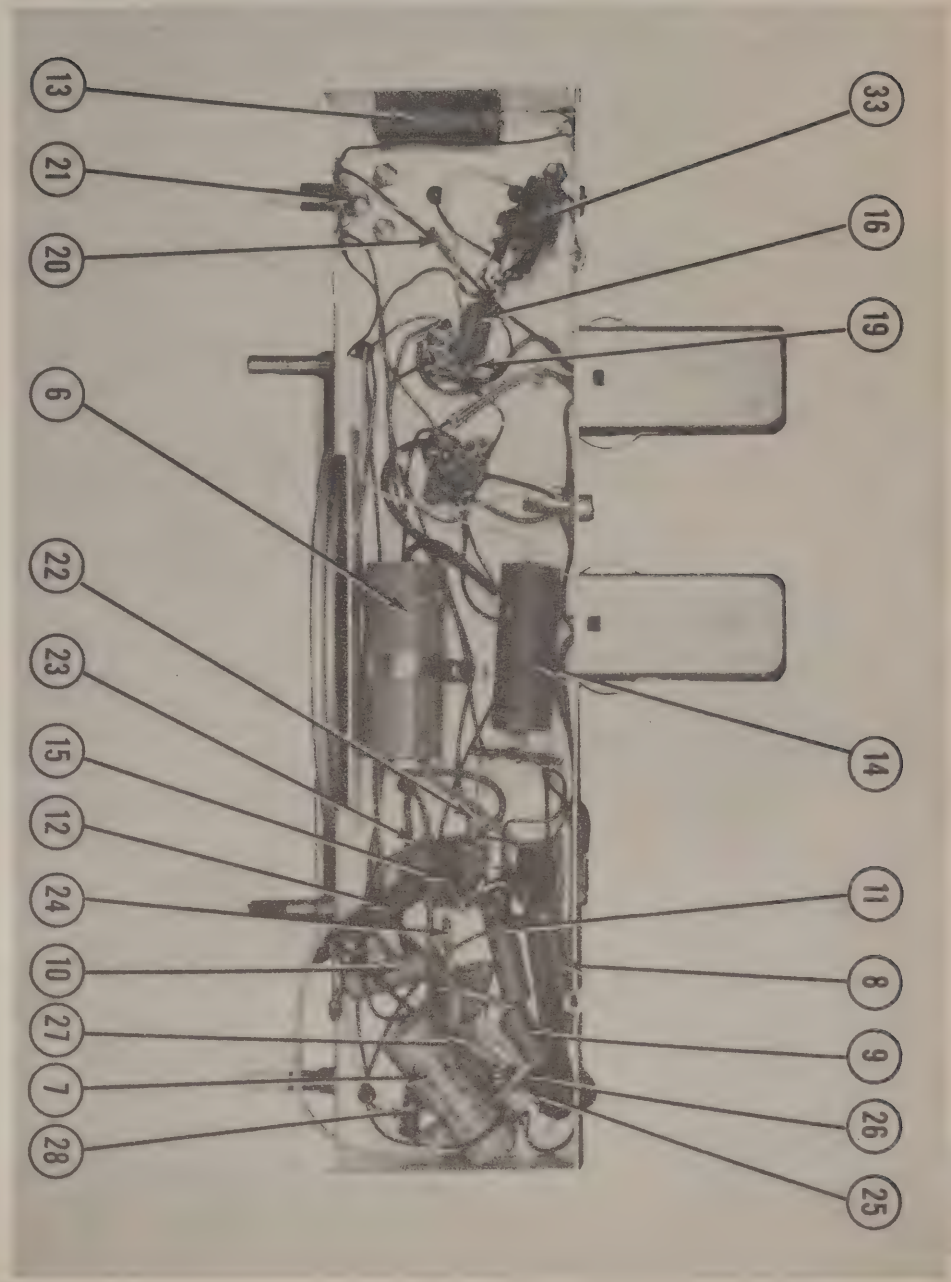
ITEM No.	REPLACEMENT DATA: MONITOR PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
37		L-40-A	

MISCELLANEOUS

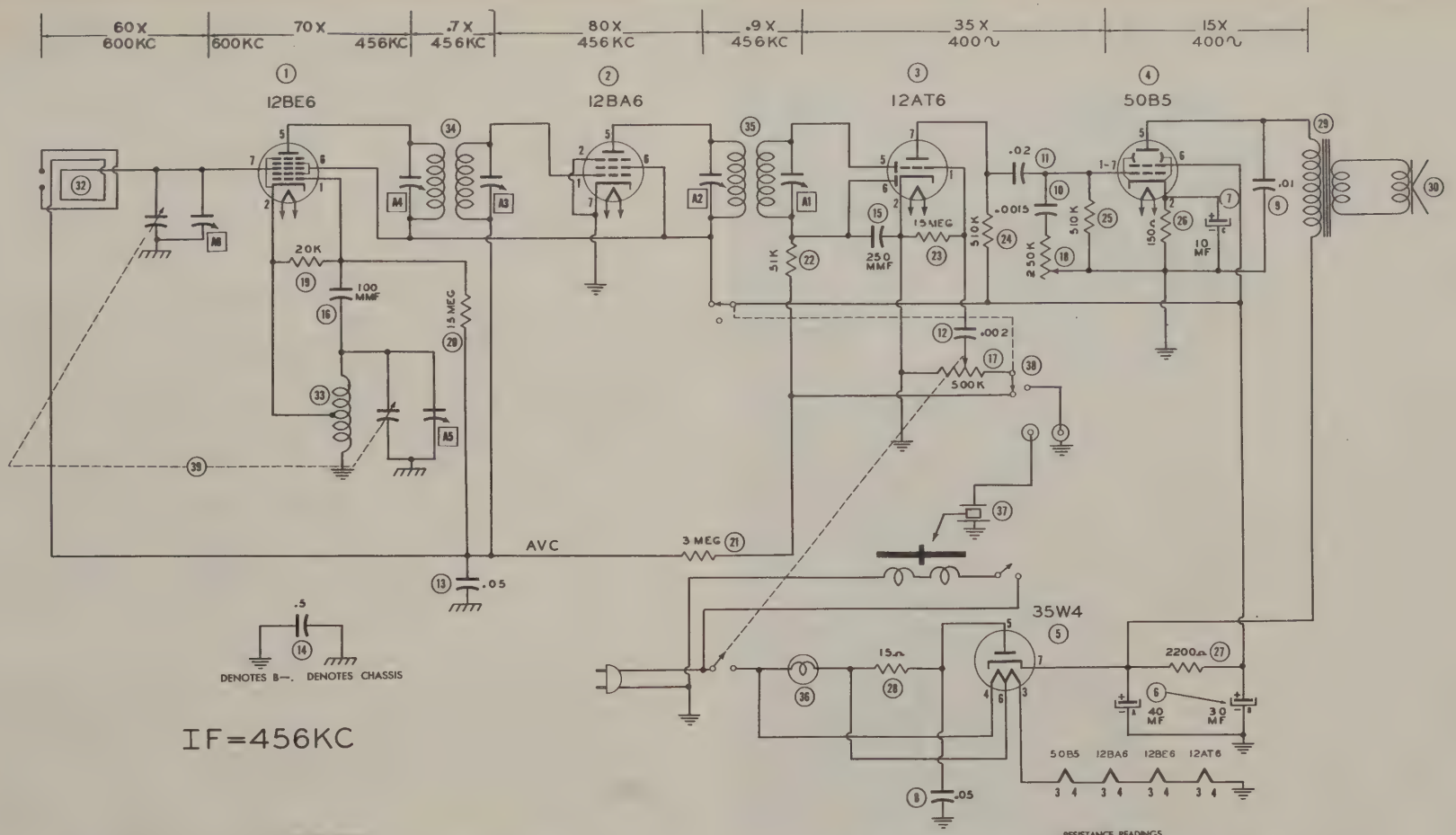
ITEM No.	PART NAME	MONITOR PART No.	NOTES
38	Switch	SW-1060	Radio-Phono
39	Tuning Cap.	CD-1217	29-446 MMF, 37-197 MMF



CHASSIS—BOTTOM VIEW



MONITOR MODEL RA-50



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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-5VDC$	0V.	25VAC	12.5VAC	75VDC	75VDC	-.2VDC
2	12BA6	-.2VDC	0V.	37VAC	25VAC	75VDC	75VDC	0V.
3	12AT6	-.45VDC	0V.	12.5VAC	0V.	-.5VDC	-.5VDC	32VDC
4	50B5	0V.	4.6VDC	85VAC	37VAC	117VDC	75VDC	0V.
5	35W4	0V.	0V.	85VAC	117VAC	112VAC	113VAC	125VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	18KΩ	.5Ω	28Ω	15Ω	155KΩ	155KΩ	3.5 Meg.
2	12BA6	3.5 Meg.	0Ω	40Ω	28Ω	155KΩ	155KΩ	0Ω
3	12AT6	15 Meg.	0Ω	15Ω	0Ω	540KΩ	540KΩ	650KΩ
4	50B5	500KΩ	150Ω	90Ω	40Ω	150KΩ	135KΩ	100KΩ
5	35W4	0Ω	0Ω	90Ω	120Ω	150Ω	117Ω	150KΩ

$TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4714-23

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SONORA
MODEL RET 210

SONORA
MODEL RET 210

SONORA MODEL RET-210

TRADE NAME	Sonora Model RET-210
MANUFACTURER	Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.
TYPE SET	AC Operated 2 Band Superheterodyne Receiver with Loop Antenna
TUBES (SEVEN)	Types, 6SG7 Mixer, 6J5 Oscillator, 6SK7 IF Amp., 6SQ7 Det.-AVC, 6SQ7 AF Amp., 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .450 Amps. @ 117V AC
TUNING RANGE—BROADCAST	535-1720KC — SHORT WAVE 5.65 - 18.3MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 4 (grid) 6SG7. Low side to chassis.	455KC	BC (Counter clockwise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	100MMFD	High side to ext. ant. lead. Low side to ext.grnd. lead.	1720KC	"	"	"	A5	" " " "
3	"	"	1400KC	"	Tune for maximum output.	"	A6	" " " "
4	"	"	600KC	"	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 and 4 until no further improvement can be made.
5	400Ω carbon resistor	"	18.3MC	SW (Clockwise)	Tuning cap. fully open.	"	A8	Adjust for maximum output Tune signal generator to 19.2MC and image should be heard. If it is not, retune signal generator to 18.3MC and loosen A8 until next peak is obtained. Adjust for maximum output and recheck for image.
6	"	"	15MC	"	Tune for maximum output.	"	A9	Rock tuning cap. and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

SONORA
MODEL RET-210

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SONORA PART No.	STANDARD REPLACEMENT		
1	Mixer	6SG7	6SG7	8BK	
2	Oscillator	6J5	6J5	6Q	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC	6SQ7	6SQ7	8Q	
5	AF Amp.	6SQ7	6SQ7	8Q	
6	Power Output	6K6GT	6K6GT	7S	
7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SONORA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
8A	12	400	N-4411	EZ12D45S	FP339	DH-2x16-450SS	EL-353	PRSA450/10-10	Filter - Blue
B	10	400			TH23			" - Red	
C	20	25				M-25-25		PRS25/20	Cath. Bypass-Grn.
9	.005	600	N-4894	DT6D5	TP408	S-6-005	TC-25	684-005	Output Plate Bypass
10	.01	400	N-1344	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
11	.005	600	N-4894	DT6D5	TP408	S-6-005	TC-25	684-005	Tone Compensation
12	.01	400	N-1344	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
13	.1	400	N-1623	DT4P1	TP428	S-4-1	TC-1	484-.1	IF Screen Bypass
14	.1	200	N-1351	DT4P1	TP428	S-4-1	TC-1	484-.1	IF Cath. Bypass
15	.05	200	N-1345	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
16	.1	400	N-1623	DT4P1	TP428	S-4-1	TC-1	484-.1	Conv. Plate Decoup.
17	.02	400	N-1376	DT4S2	TP423	S-4-02	TC-12	484-02	Conv. Screen Bypass
18	.01	400	N-1344	DT4S1	TP421	S-4-01	TC-11	484-01	Osc. Plate Bypass
19	.05	200	N-1345	DT4S5	TP426	S-4-05	TC-15	484-05	Mixer Cathode
20	100	500	N-1374	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Audio Plate Bypass
21	50	500	N-1342	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Capacitor
22	250	500	N-1343	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	RF Coupling
23	4000	300	N-1690	1W5D4	MC463	MW.5-24	1FM-24	1467-004	Fixed Padder
24	250	500	N-1343	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Loop Pri. Shunt

CONTROLS

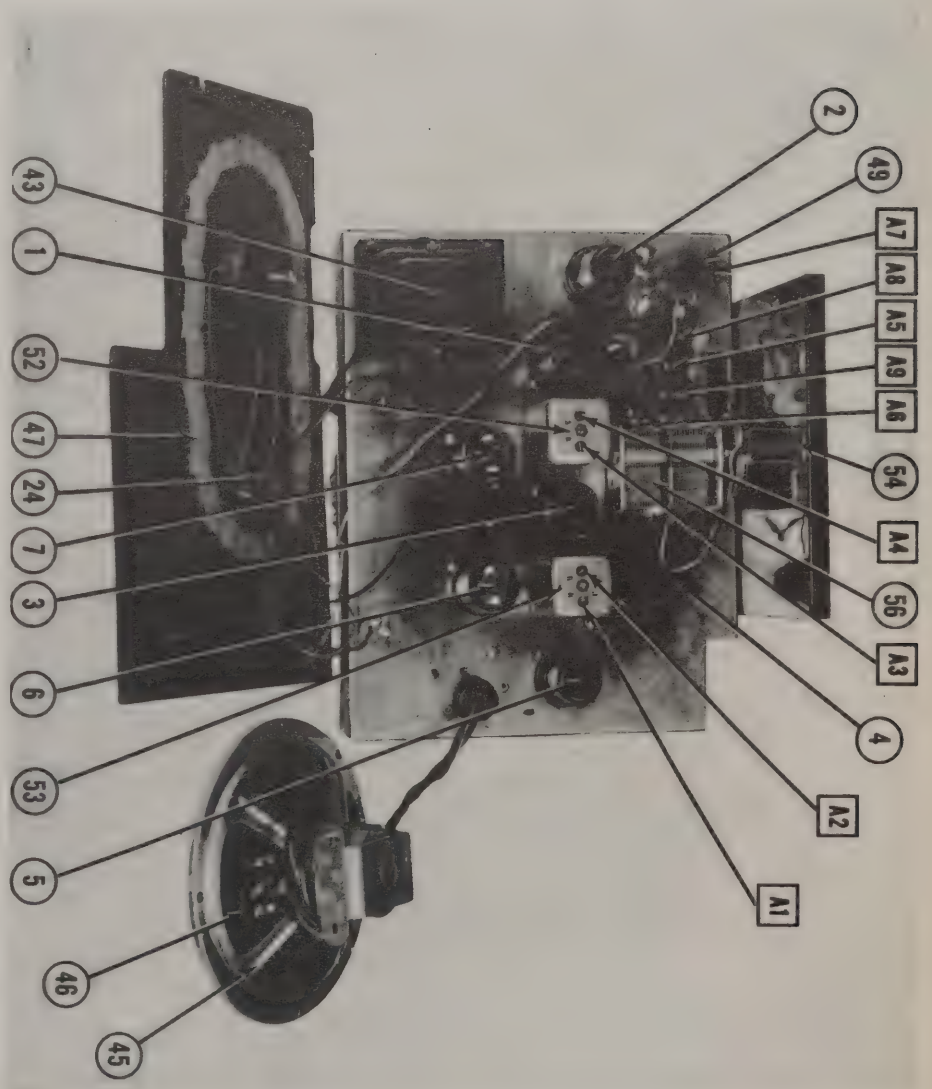
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SONORA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
25A	500KΩ	1	N-4843	MK401	D13-133	AM-60-Z	Volume Control N-4014
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 25A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
26A	500KΩ	1	N-4399				Tone Control N-5161
B	Shaft		Not Req.				Attach to 26A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SONORA PART No.	IRC PART No.	
27	47KΩ	½	N-4063	BTS-47K	Yl.-Vl.-Or. Oscillator Grid
28	1000Ω	½	N-3341	BTS-1000	Br.-Blk.-Red Converter Cathode
29	3.3 Meg.	½	N-4062	BTS-3.3 Meg.	Or.-Or.-Grn. Converter Grid
30	330KΩ	½	N-4423	BTS-330K	Or.-Or.-Yl. Converter Screen Dropping
31	10KΩ	½	N-1258	BTS-10K	Br.-Blk.-Or. Converter Plate Decoupling
32	27KΩ	½	N-4451	BTS-27K	Red-Vl.-Or. Oscillator Plate Load
33	270Ω	½	N-4121	BW-½-270	Red-Vl.-Br. IF Cathode
34	1 Meg.	½	N-1262	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
35	47KΩ	½	N-4063	BTS-47K	Yl.-Vl.-Or. IF Screen Dropping
36	47KΩ	½	N-4063	BTS-47K	Yl.-Vl.-Or. Series Volume Control
37	10 Meg.	½	N-1263	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
38	33KΩ	½	N-4064	BTS-33K	Or.-Or.-Or. Tone Compensation
39	330KΩ	½	N-4423	BTS-330K	Or.-Or.-Yl. AF Plate Load
40	2.2 Meg.	½	N-4424	BTS-2.2 Meg.	Red-Red-Grn. Feedback
41	470Ω	1	N-4421	BW-1-470	Yl.-Vl.-Br. Output Cathode
42	180Ω	½		BW-½-180	Br.-Gray-Br. Filter - See Note

Note - Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	SONORA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	INSTALLATION NOTES
43	117V AC @ .45A	560V CT @ .05A	5.1V AC @ 2.0A	6.5V AC @ 2.0A	N-4396	P-6119*	T22R01*	P-2591*	*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SONORA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
44	7500Ω	3.5Ω	730Ω	.6Ω	N-4395	A-3978	T22S47	A-2931	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SONORA PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.		ST-166		
45	1000Ω	3.5Ω	N-4394	Mod. F6-X		
	CONE DIA.	VC DIA.				
46	6"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SONORA PART No.	MEISSNER PART No.	
47	Loop Ant.	21Ω	.6Ω	N-4401		
48	Loop Load. Coil		2Ω	N-4407		
49	SW Ant.Coil	1Ω	0Ω	N-5821	14-1044	
50	BC Osc.Coil	.3Ω	5Ω	N-4403	14-1040	
51	SW Osc.Coil	.2Ω	0Ω	N-4404		
52	Input IF	21Ω	21Ω	N-4405	16-6658	
53	Output IF	21Ω		N-4406	16-6670	

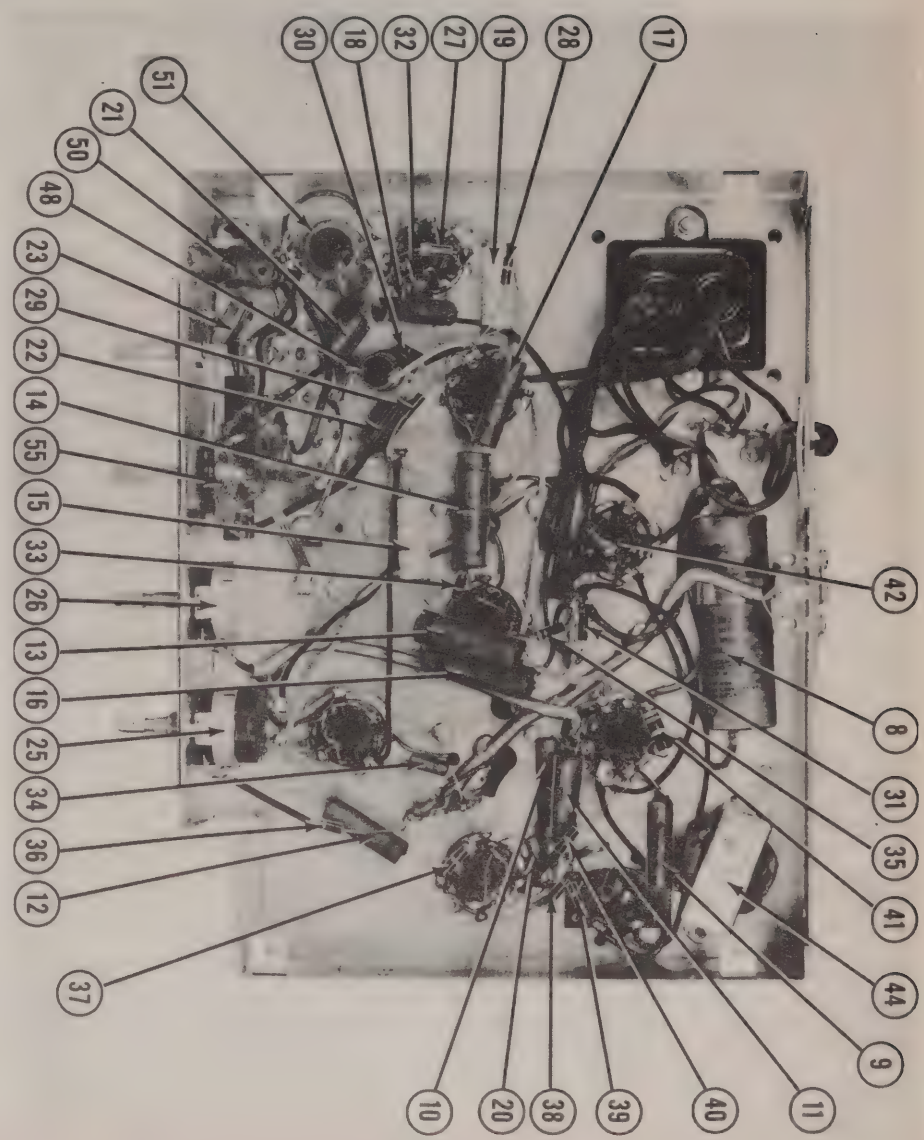
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SONORA PART No.		
54	Bayonet	6-8	0.15	Brown			Type 47

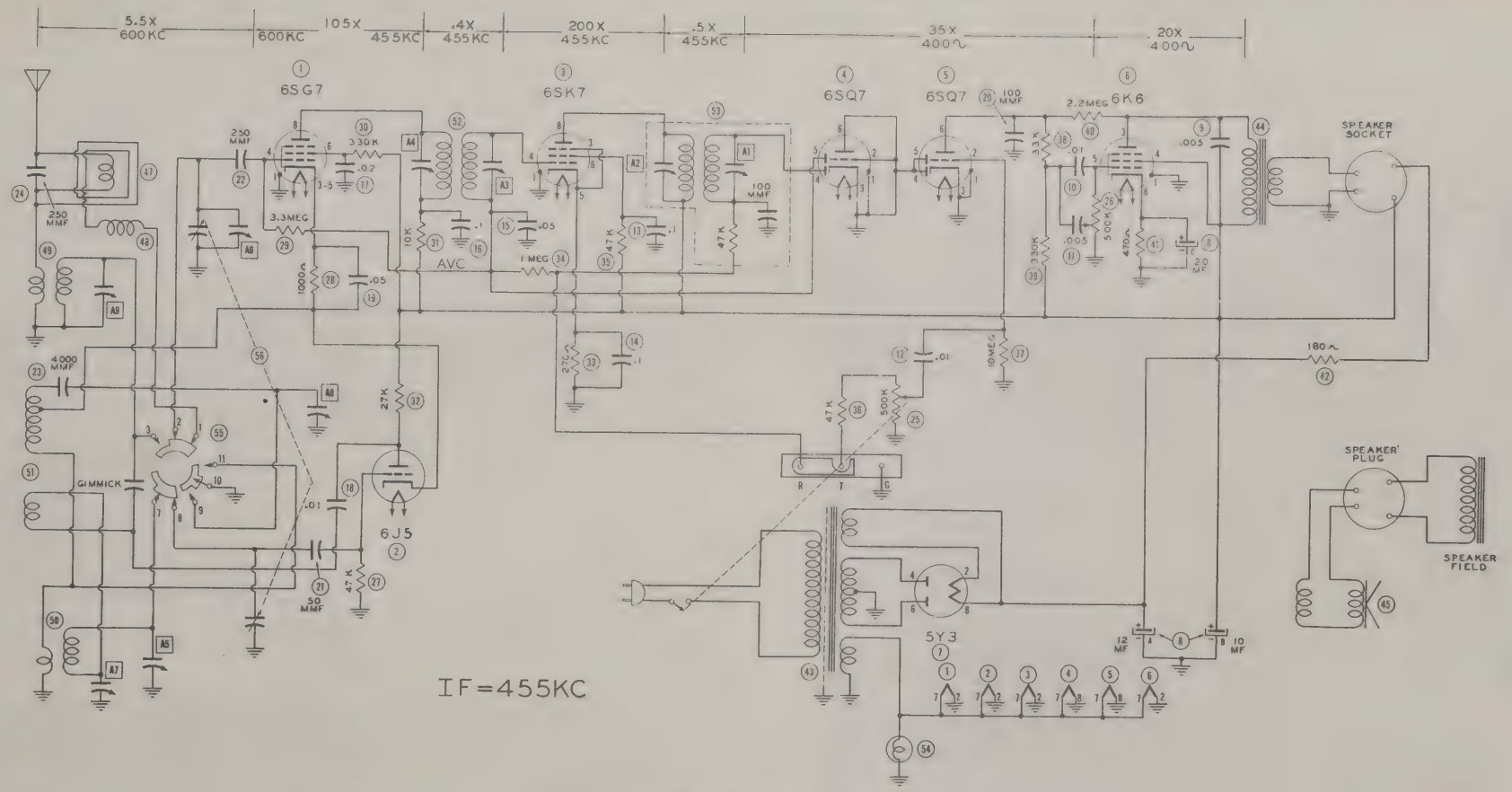
MISCELLANEOUS

ITEM No.	PART NAME	SONORA PART No.	NOTES
55	Band Switch	N-4400	
56	Tuning Capacitor	N-4397	(17-457 MMF, 17-457 MMF)
A5	Trimmer Strip	N-2158	BC Osc. Adj.
A8			SW " "
A9			SW Ant. "
A7	Trimmer	N-1254	BC Osc. Padder

CHASSIS—BOTTOM VIEW



SONORA MODEL RET-210



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0V.	0V.	2VDC	0V.	2VDC	75VDC	6.5VAC	225VDC
2	6J5	0V.	0V.	68VDC	245VDC	-1VDC§	0V.	6.5VAC	0V.
3	6SK7	0V.	0V.	3.3VDC	-.3VDC	3.1VDC	110VDC	6.5VAC	245VDC
4	6SQ7	0V.	0V.	0V.	-.2VDC	-.3VDC	0V.	6.5VAC	0V.
5	6SQ7	0V.	-.45VDC	0V.	0V.	0V.	88VDC	6.5VAC	0V.
6	6K6GT	0V.	0V.	230VDC	245VDC	0V.	0V.	6.5VAC	18VDC
7	5Y3GT	0V.	300VDC	0V.	280VAC	0V.	280VAC	300VDC	300VDC

§TAKEN WITH VACUUM-TUBE VOLTMETER.

VOLTAGE AND RESISTANCE READINGS TAKEN IN PRIMARY POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0Ω	0Ω	1000Ω	5 MEG.	1000Ω	580KΩ	.1Ω	290KΩ
2	6J5	0Ω	0Ω	750KΩ	250KΩ	50KΩ	INF.	.1Ω	.5Ω
3	6SK7	0Ω	0Ω	250Ω	1.7 MEG.	290Ω	300KΩ	.1Ω	290KΩ
4	6SQ7	0Ω	0Ω	0Ω	670KΩ	1.7 MEG.	0Ω	.1Ω	0Ω
5	6SQ7	0Ω	1.8 MEG.	0Ω	0Ω	0Ω	600KΩ	.1Ω	0Ω
6	6K6GT	INF.	0Ω	250KΩ	250KΩ	470KΩ	80Ω	.1Ω	450Ω
7	5Y3GT	INF.	250KΩ	INF.	360Ω	INF.	370Ω	250KΩ	250KΩ

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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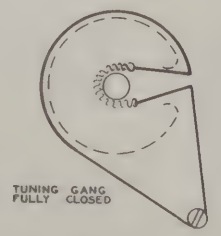


DIAL CORD DRIVE

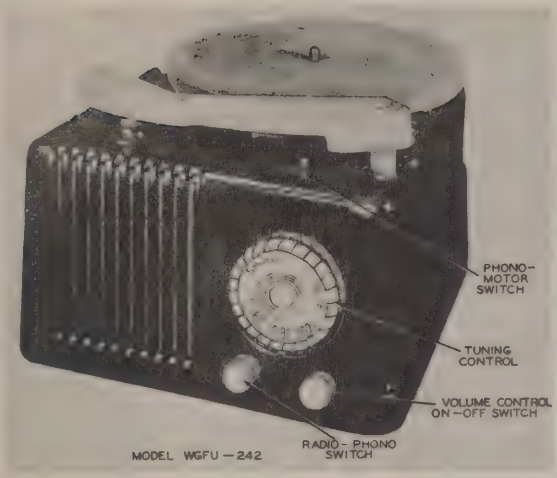
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

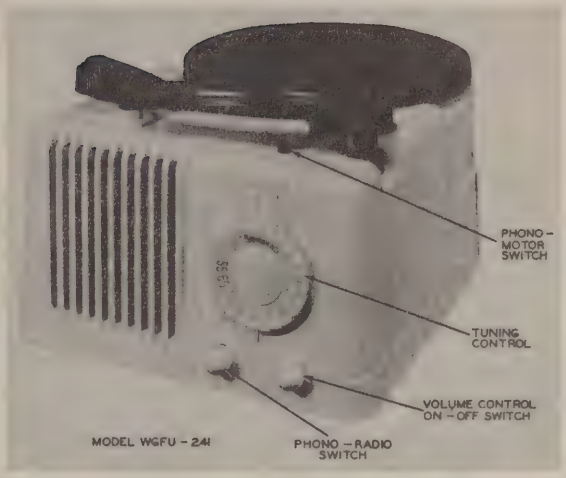
4714-24

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

SONORA MODEL
WGFU-241, WGFU-242





TRADE NAME	Sonora, Model WGFU-241, WGFU-242
MANUFACTURER	Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1620KC RATING .240 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) 12SA7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	100 MMFD	High side to ext. ant. lead. Low side to B-.	1620KC	"	"	A4	Adjust for maximum output.
3	100 MMFD	"	1400KC	Tune for maximum output.	"	A5	" " " "

DISASSEMBLY INSTRUCTIONS

1. Remove two push-on type control knobs.
2. Remove push-on type dial.
3. Remove four screws holding chassis mounting board to bottom of cabinet.
4. Remove three Phillips head screws holding mounting board to chassis. Remove mounting board from chassis.
5. Remove phono-motor plug from chassis.
6. Remove phono-pickup plug from chassis.
7. Remove chassis from cabinet.

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PARTS LIST AND DESCRIPTIONS

SONORA MODELS
WGFU-241, WGFU-242

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SONORA PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	35L6GT	35L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SONORA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	40	150	N-5051	BRD4415	2N511	DSB-2x40-150	TA440	PRSA150-40-40	Filter - Red
B	40	150							" - Blue
7	.05	400	N-1346	DT4S5	TP426	S-4-05	TC-15	484-05	Line Bypass
8	.09	200	N-4957	DT4P1	TP428	S-4-1	TC-1	484-.1	Phono Isolation
9	.02	400	N-1376	DT4S2	TP423	S-4-02	TC-12	484-02	Tone Compensation
10	.01	400	N-1344	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
11	.0005	600	N-4890	DT6T5	TP403	S-6-0005	TC-35		AF Plate Bypass
12	.005	600	N-4894	DT6D5	TP408	S-6-005	TC-25	684-005	Audio Coupling
13	.05	200	N-1345	DT4S5	TP426	S-4-05	TC-15	484-05	Line Isolation
14	.05	200	N-1345	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
15	.05	200	N-1345	DT4S5	TP426	S-4-05	TC-15	484-05	DC Blocking
16	100	500	N-1374	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Blocking

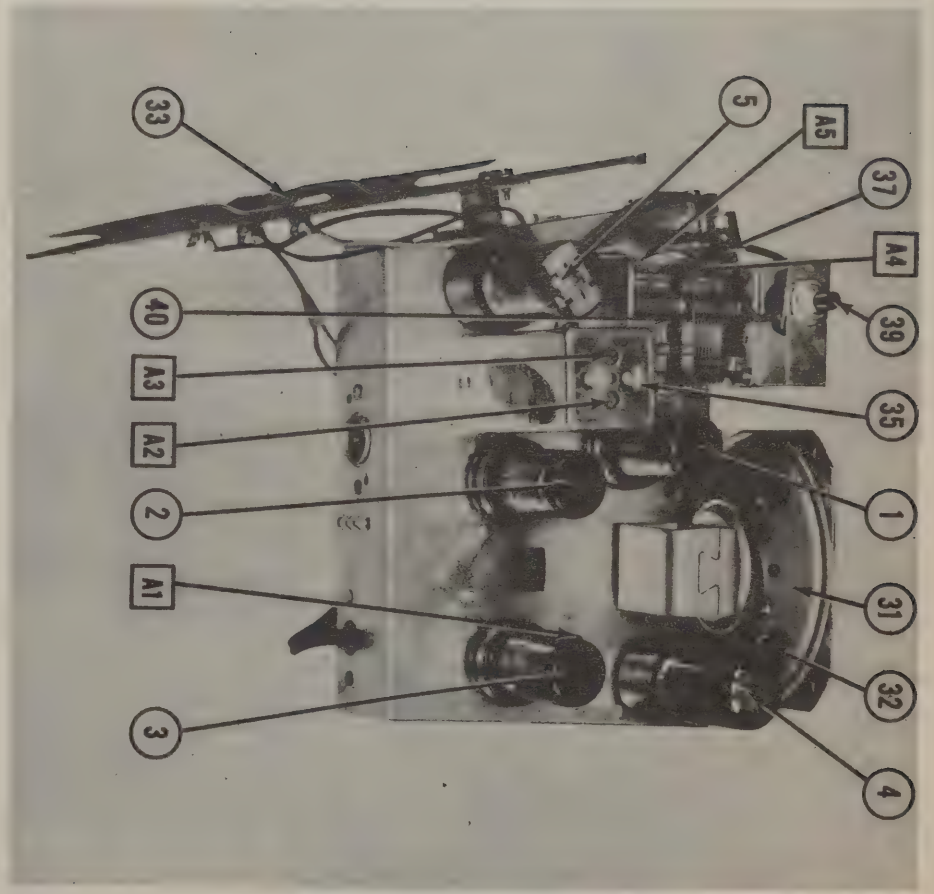
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SONORA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
17A	500KΩ	1	N-6097	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SONORA PART No.	IRC PART No.	
18	22KΩ	½	N-4025	BTS-22K	Red-Red-Or. Oscillator Grid
19	220KΩ	½	N-4026	BTS-220K	Red-Red-Yl. Line Isolation
20	1 Meg.	½	N-1262	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
21	47KΩ	½	N-4063	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
22	1 Meg.	½	N-1262	BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
23	6.8 Meg.	½	N-4028	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid
24	220KΩ	½	N-4026	BTS-220K	Red-Red-Yl. AF Plate Load
25	470KΩ	½	N-4027	BTS-470K	Yl.-Vi.-Yl. Output Grid
26	180Ω	½	N-4067	BW-½-180	Br.-Gray-Br. Output Cathode
27	1000Ω	1	N-5358	BTA-1000	Br.-Blk.-Red Filter
28	33Ω	½	N-4022	BW-½-33	Or.-Or.-Blk. Surge Limiter
29	82Ω	2	N-4023	BW-2-82	Gray-Red-Blk. Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SONORA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
30	2800Ω	3.5Ω	205Ω tapped @ 7.5Ω	.55Ω	N-4875	A-3876*		A-2928*	*Add extra filter to reduce hum level.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SONORA PART No.	JENSEN PART No.		
31	FIELD PM	VC IMP. 3.5Ω	N-6102	ST-113 Mod. P4-X		
32	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SONORA PART No.	MEISSNER PART No.	
33	Loop Ant.	0Ω	1.3Ω	N-6100		
34	Osc. Coil	.8Ω	6.1Ω	N-4810	14-1040	
35	Input IF	21Ω	20Ω	N-4813	16-6658	
36	Output IF	29Ω	29Ω	N-4846		

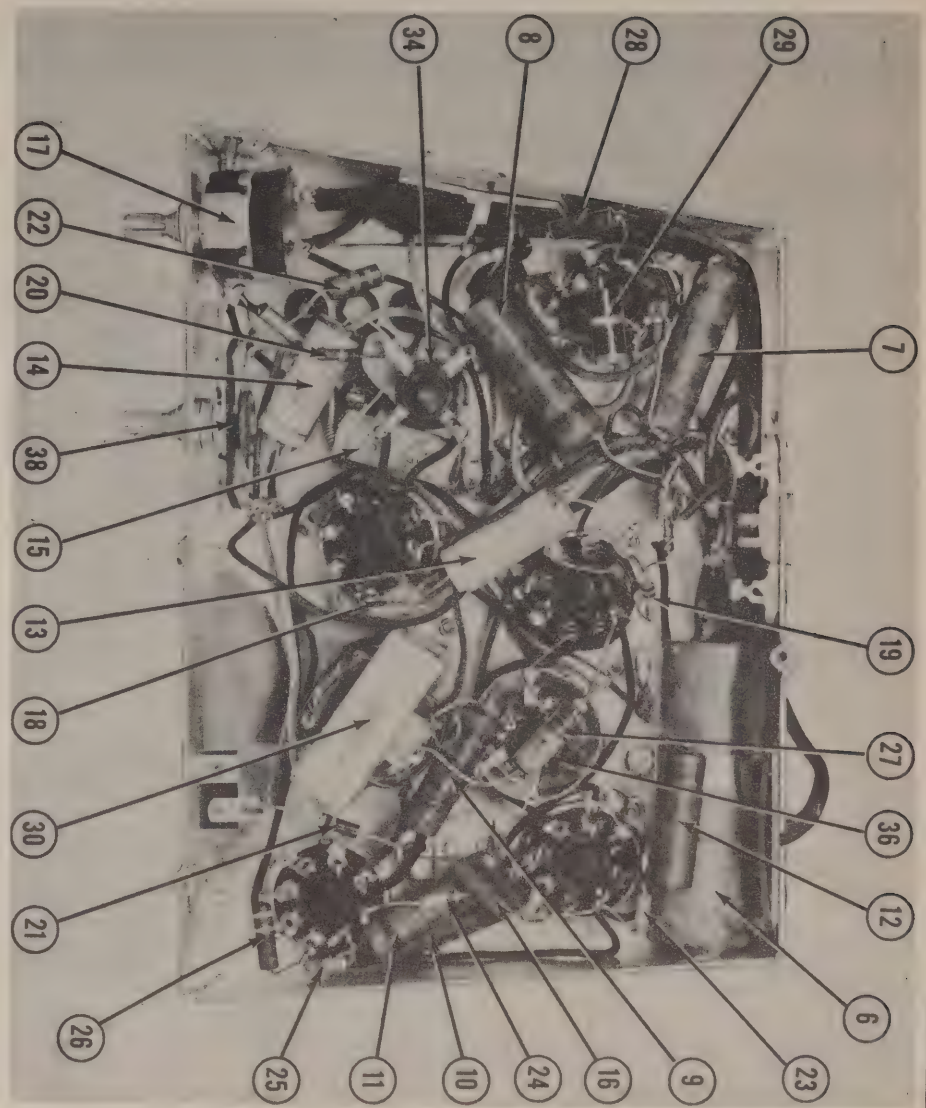
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SONORA PART No.		
37	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

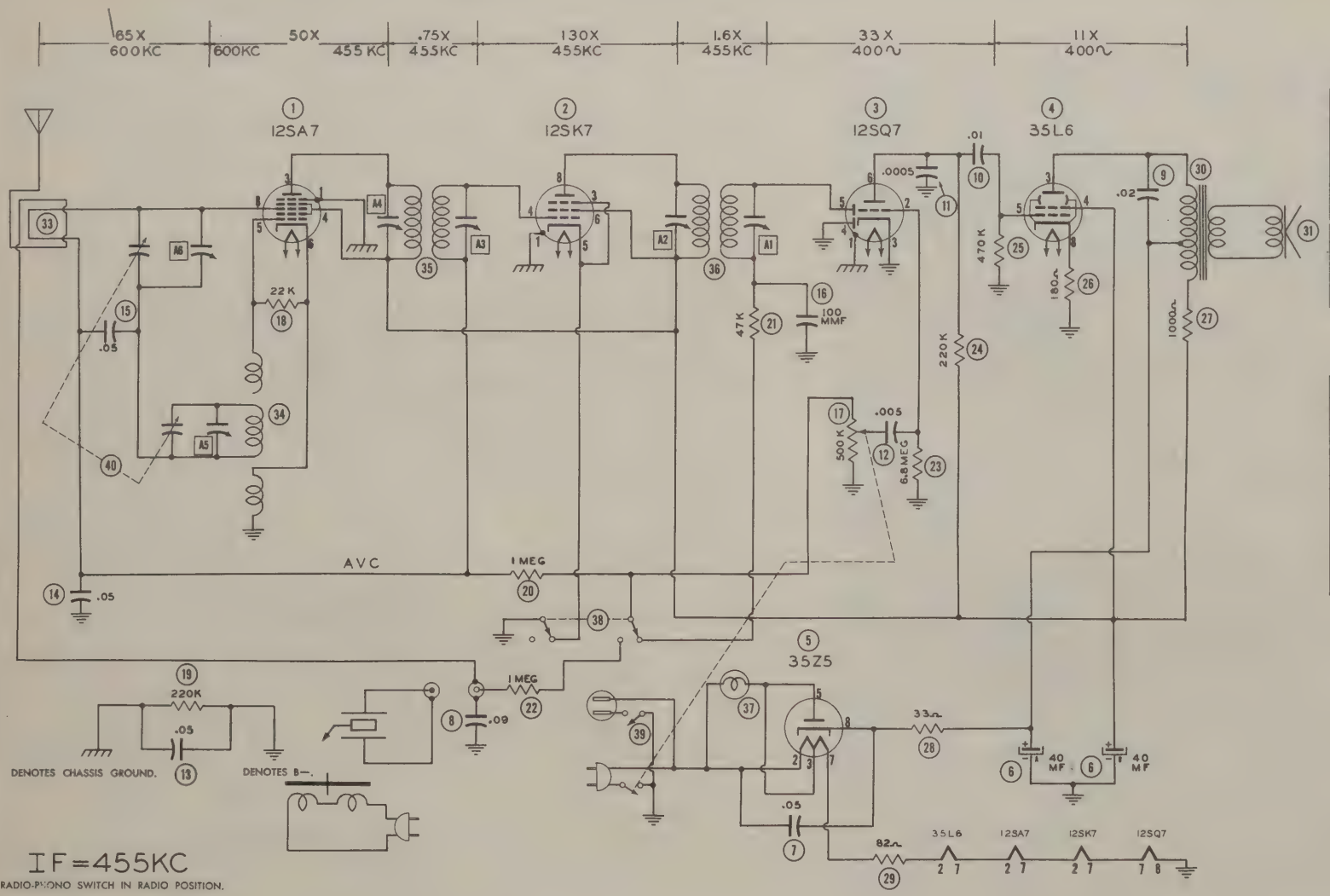
ITEM No.	PART NAME	SONORA PART No.	NOTES
38	Switch	N-2877	Phono-Radio
39	"	N-2094	Phono Motor
40	Tuning Cap.	N-6093	25-395 MMF, 15-201 MMF

CHASSIS—BOTTOM VIEW



SONORA MODELS WGFU-241, WGFU-242

SONORA MODELS WGFU-241, WGFU-242



IF=455KC

RADIO-PHONO SWITCH IN RADIO POSITION.

RADIO-PHONO SWITCH IN RADIO POSITION.

Pin No.	12SA7 Volt.	12SA7 Res.	12SK7 Volt.	12SK7 Res.
1	0V.	230KΩ	0V.	230KΩ
2	39VAC	44Ω	26VAC	31Ω
3	87VDC	70KΩ	0V.	0Ω
4	87VDC	70KΩ	-.3VDC	1.5 MEG.
5	-5VDC§	20KΩ	0V.	0Ω
6	0V.	.7Ω	87VDC	70KΩ
7	26VAC	31Ω	13VAC	15Ω
8	-.3VDC	1.5 MEG.	87VDC	70KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin No.	12SQ7 Volt.	12SQ7 Res.	35L6 Volt.	35L6 Res.
1	0V.	230KΩ	0V.	INF.
2	-.5VDC	7 MEG.	72VAC	85Ω
3	0V.	0Ω	108VDC	70KΩ
4	0V.	0Ω	87VDC	70KΩ
5	-.4VDC	580KΩ	0V.	500KΩ
6	60VDC	290KΩ	0V.	0Ω
7	13VAC	15Ω	39VAC	44Ω
8	0V.	0Ω	5VDC	180Ω

35Z5 Volt.	35Z5 Res.
0V.	INF.
117VAC	200Ω
112VAC	195Ω
72VAC	85Ω
112VAC	195Ω
113VDC	70KΩ
85VAC	170Ω
115VDC	70KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4714-25

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

TELE-TONE MODEL
148 (Ch. Series J)

TELE-TONE MODEL
148 (Ch. Series J)

TELE-TONE MODEL 148

TRADE NAME	Tele-Tone Model 148 (Ch. Series J)
MANUFACTURER	Tele-Tone Radio Co., 609 West 51st, New York, N.Y.
TYPE SET	AC-DC Superheterodyne with Self Contained Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	530-1700KC RATING .230 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning capacitor fully closed and set left edge of dial pointer 1/2" from left edge of dial backplate. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2,	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1500KC	Set left edge of dial pointer 3/4" from left edge of dial backplate.	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	"	Tune for maximum output.	"	A4	"

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PARTS LIST AND DESCRIPTIONS

TELE-TONE MODEL 148

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		TELE-TONE PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	TELE-TONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	20	150	A-CE-1	EZ42215	FP354	DSB-3x20-150	TA-220	PRSA150-20-	Filter - Blue
B	20	150						20	" - Green
C	20	150					UT-201	PRS150-20	" - Red
7	.02	400		DT4S2	TP423	MPW-6-02	TC-12	484-02	Line Filter
8	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
9	.01	150		DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
10	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	" "
11	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	AVC Filter
12	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Isolation
13	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
14	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Conv. Cathode Bypass
15	.001	600		DT6D1	TP404	S-6-001	TC-21	684-001	DC Blocking
16	150	500		5W5T15	MC236	MO.5-315	1FM-215	1468-00015	Diode Filter
17	150	500		5W5T15	MC236	MO.5-315	1FM-215	1468-00015	IF Coupling

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	TELE-TONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
18	1 Meg.	1	H-VC-2				Volume Control & Sw.

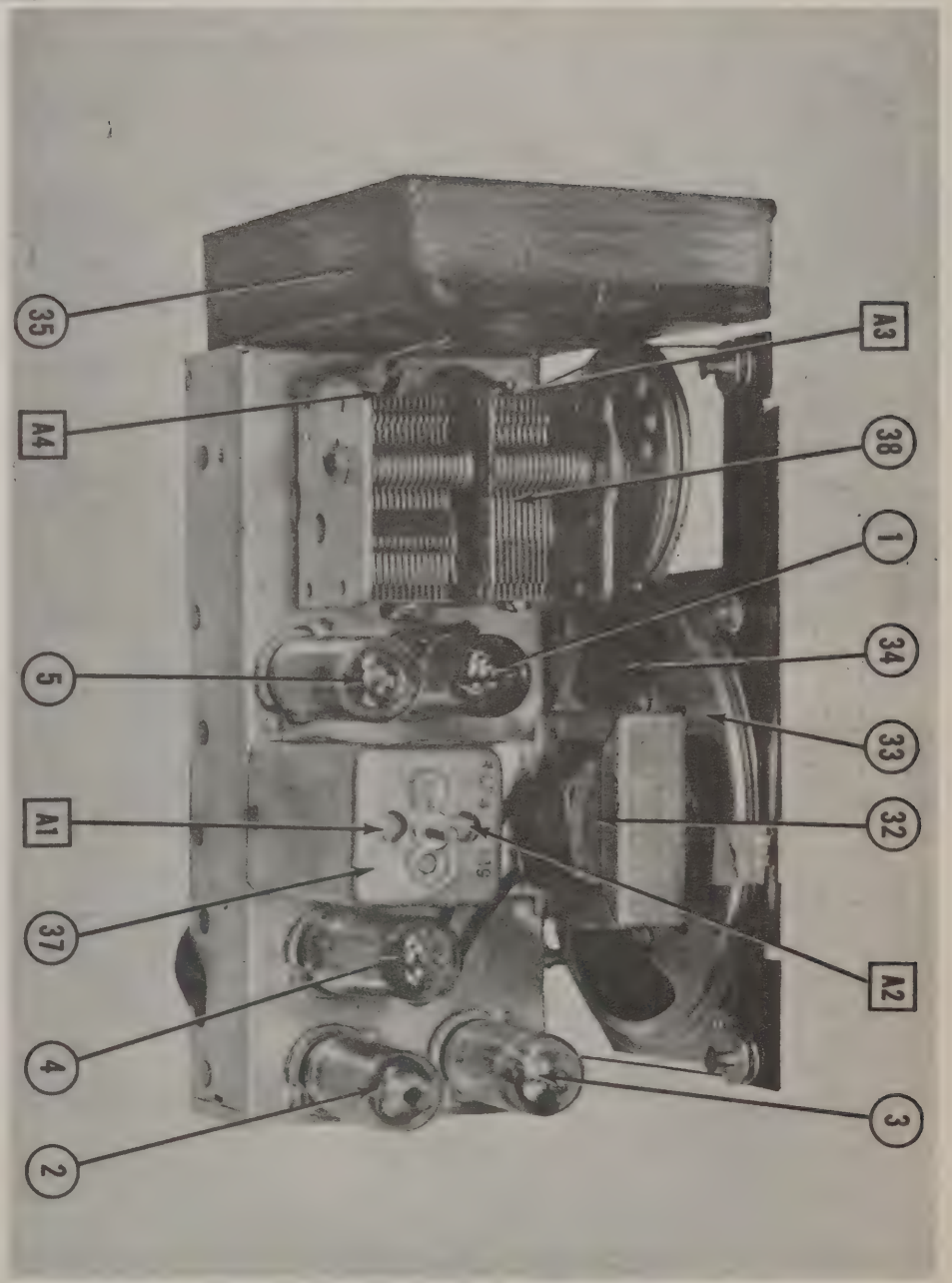
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	TELE-TONE PART No.	IRC PART No.	
19	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
20	82Ω	½		BW-½-82	Gray-Red-Blk. Converter Cathode
21	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
22	6800Ω	½		BTS-6800	Blue-Gray-Red IF Plate Load
23	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
24	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Diode RF Filter
25	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Diode Load
26	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
27	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
28	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
29	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
30	1500Ω	1		BTA-1500	Br.-Grn.-Red Filter
31	150Ω	1		BW-1-150	Br.-Grn.-Br. Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TELE-TONE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
32	3200Ω	3.5Ω	250Ω	.8Ω	H-TR3	A-3876*	T22846*	A-2928*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

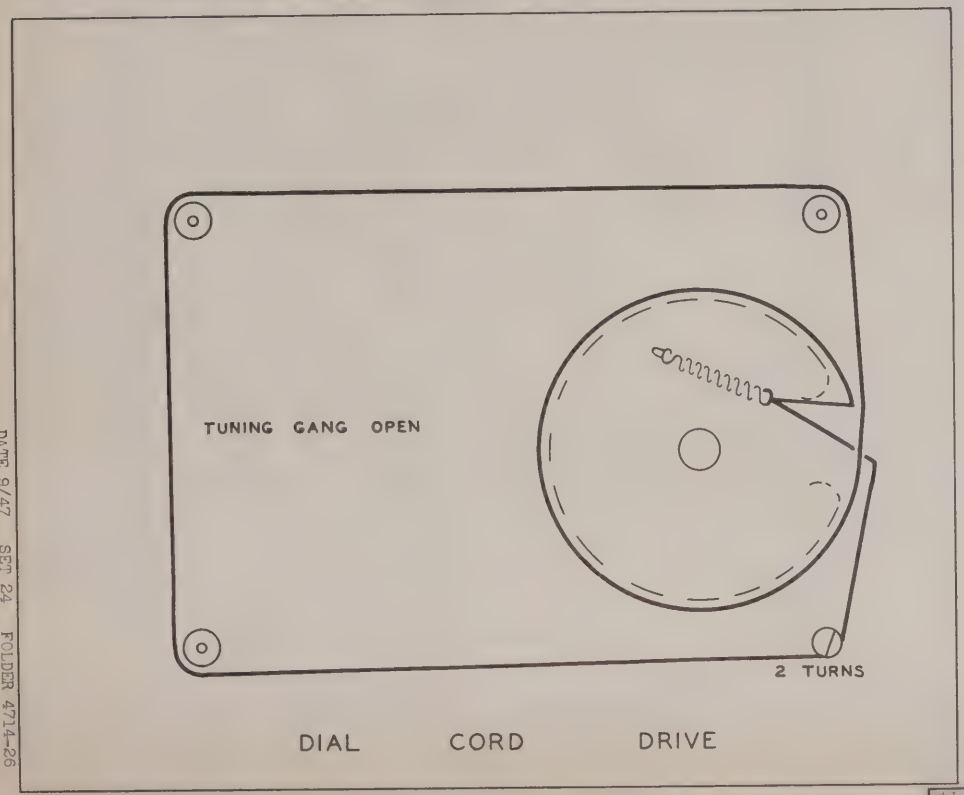
ITEM No.	RATINGS		REPLACEMENT DATA TELE-TONE PART No.	JENSEN PART No.		INSTALLATION NOTES
33	FIELD PM	VC IMP. 3.5Ω	H-SP3			
34	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

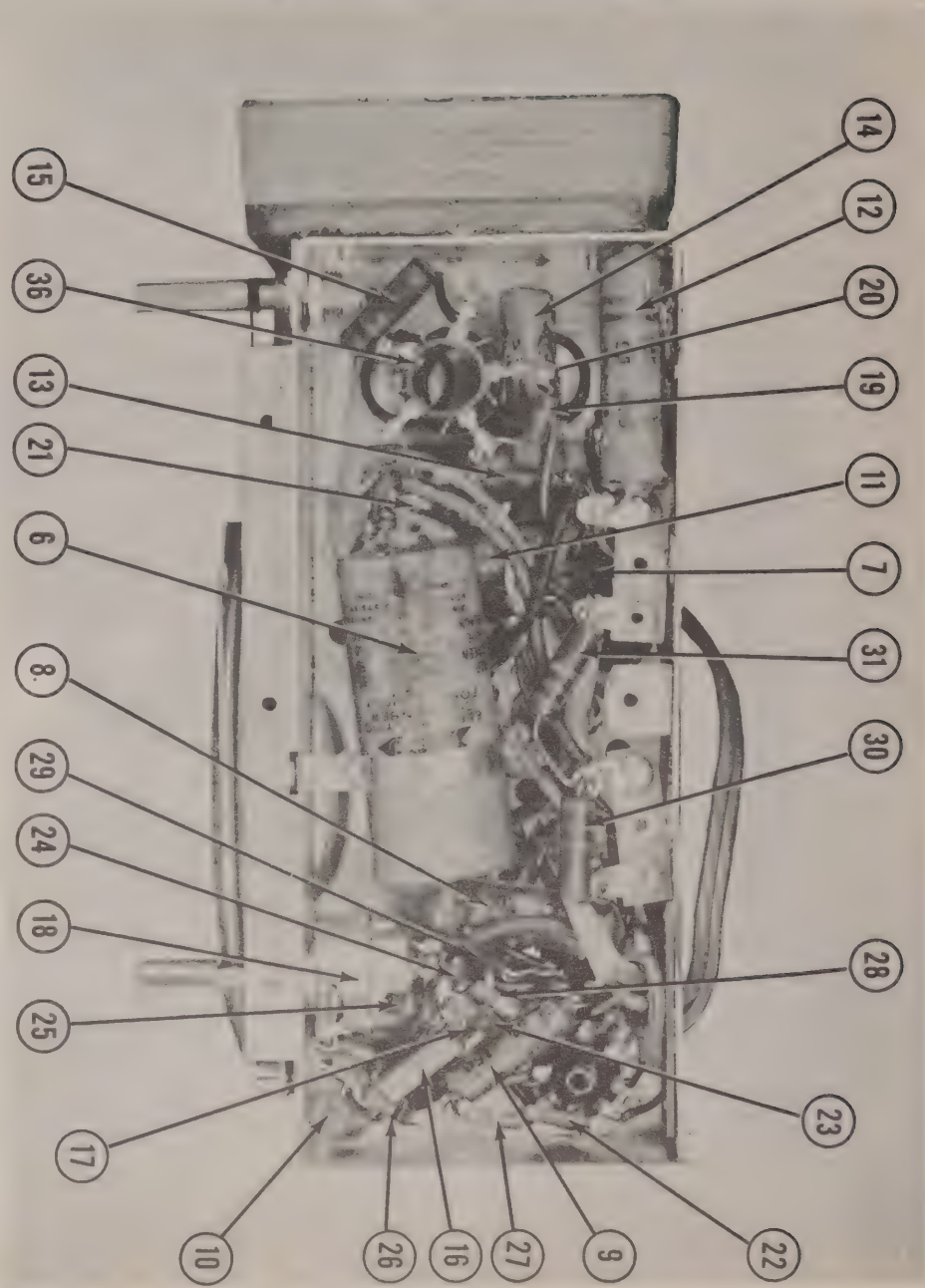
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TELE-TONE PART No.	MEISSNER PART No.	
35	Loop Ant.		3Ω			
36	Osc. Coil	.5Ω	6Ω	A-LC-1	14-1040‡	‡Add 50 MMF from osc. grid to high side tuning cap.
37	Input IF	36Ω	22.5Ω	H-LF-4	16-6658	

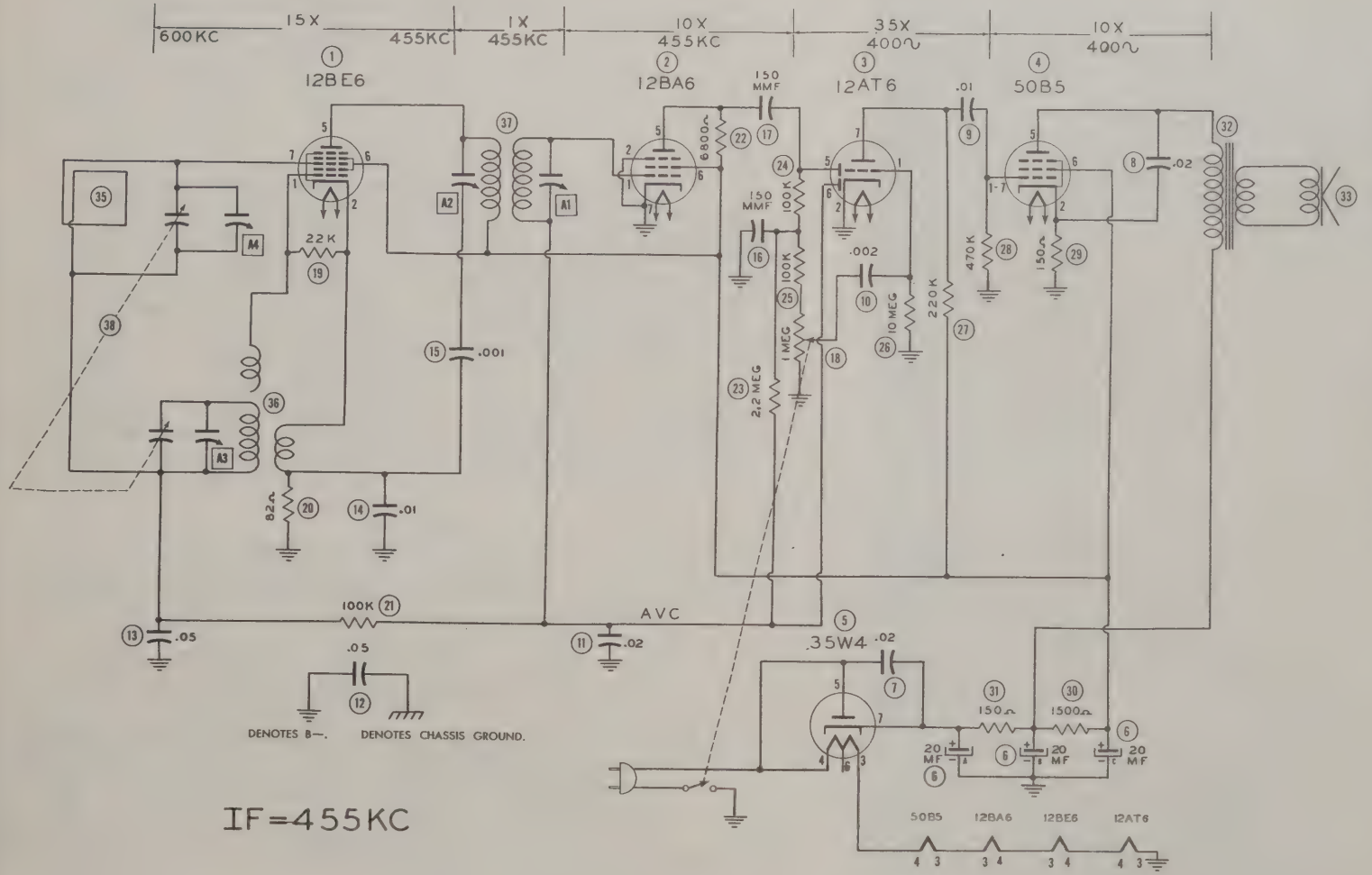
MISCELLANEOUS

ITEM No.	PART NAME	TELE-TONE PART No.	NOTES
38	Tuning Cap.	ACV1	35-483 MMF, 25-187 MMF



CHASSIS—BOTTOM VIEW





Pin	12BE6		12AT6	
No.	Volt.	Res.	Volt.	Res.
1	-5.5VDC$	22KΩ	-.5VDC	3 Meg.
2	.7VDC	80Ω	0V.	0Ω
3	24VAC	22Ω	35VAC	33Ω
4	12VAC	12Ω	24VAC	22Ω
5	95VDC	500KΩ	35VDC	505KΩ
6	95VDC	500KΩ	95VDC	500KΩ
7	-.5VDC	3 Meg.	0V.	0Ω

$TAKEN WITH VACUUM TUBE VOLTMETER.

Pin	12AT6		50B5	
No.	Volt.	Res.	Volt.	Res.
1	-.3VDC	1.2 Meg.	0V.	450KΩ
2	0V.	0Ω	6.1VDC	150Ω
3	0V.	0Ω	35VAC	33Ω
4	12VAC	12Ω	72VAC	75Ω
5	-.3VDC	1.2 Meg.	112VDC	500KΩ
6	-.5VDC	3 Meg.	95VDC	500KΩ
7	0VDC	720KΩ	0V.	450KΩ

Pin	35W4	
No.	Volt.	Res.
1	0V.	INF.
2	0V.	INF.
3	72VAC	75Ω
4	117VAC	100Ω
5	117VAC	100Ω
6	110VAC	88Ω
7	125VDC	500KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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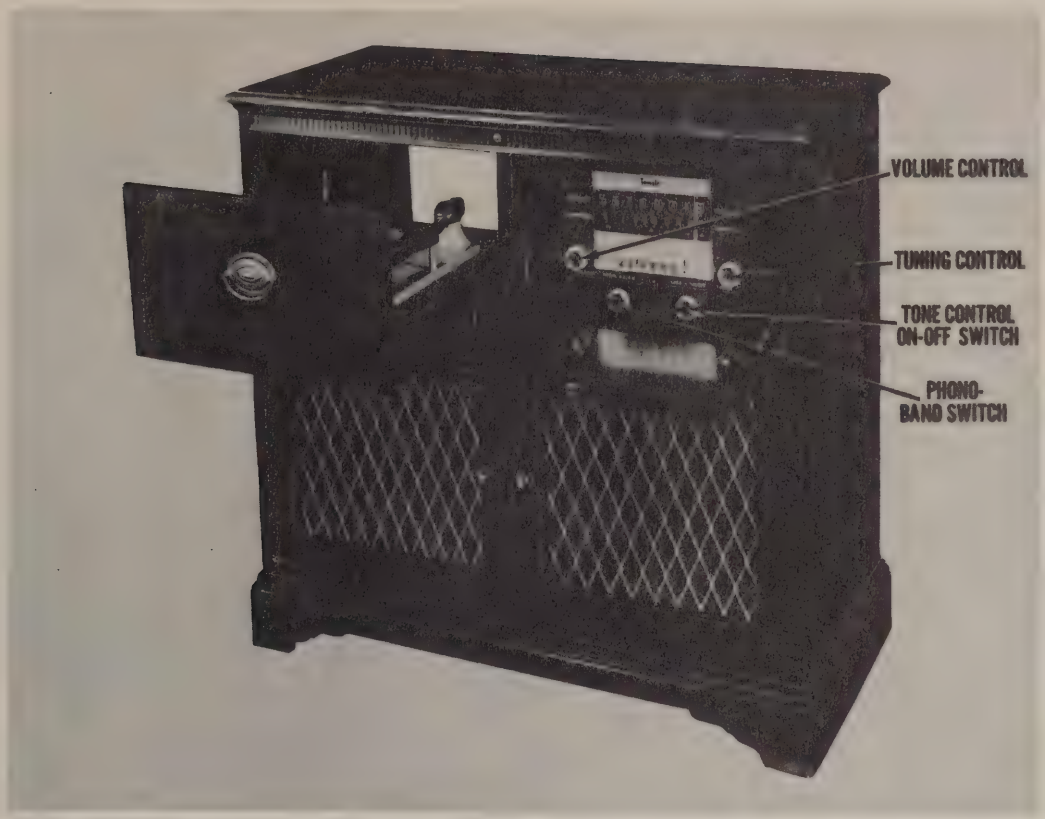
4 714-26

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



TEMPLE
MODEL G-722

TEMPLE
MODEL G-722

TEMPLE MODEL G-722

TRADE NAME	Temple, Model G-722
MANUFACTURER	Templetone Radio Mfg. Corp., New London, Conn.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne Receiver with Self Contained Loop Antenna and Pushbutton Tuning
TUBES (SEVEN)	7Q7 RF Amp., 7H7 Converter, 7B6 IF Amp., 7C7 Det.-AVC-AF, (2) 7C5 Power Output, 5Y3G Rectifier.
POWER SUPPLY	105-125 Volts AC — RATING .570 Amps. @ 117V AC
TUNING RANGE—BROADCAST	550-1650KC — **SHORT WAVE** 5.75-18.25MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer 1-5/8" from left edge of dial backplate. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	BC (center position)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2		Loop	1650KC	"	"	"	A5	" " " "
3		"	535KC	"	Tuning cap. fully closed	"	A6	Adjust for maximum output Repeat Steps 2 and 3 until both end limits are reached.
4	.01 MFD in series with 400Ω carbon resistor	High side to ext. ant. lug. Low side to chassis.	16MC	SW (fully clockwise)	Tune for maximum output.	"	A7	Rock tuning cap. and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TEMPLE MODEL G-723

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TEMPLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	7Q7	7Q7	8AL	
2	Converter	7H7	7H7	8V	
3	IF Amp.	7B6	7B6	8W	
4	Det.-AVC-AF	7C7	7C7	8V	
5	Power Output	7C5	7C5	6AA	
6	Power Output	7C5	7C5	6AA	
7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

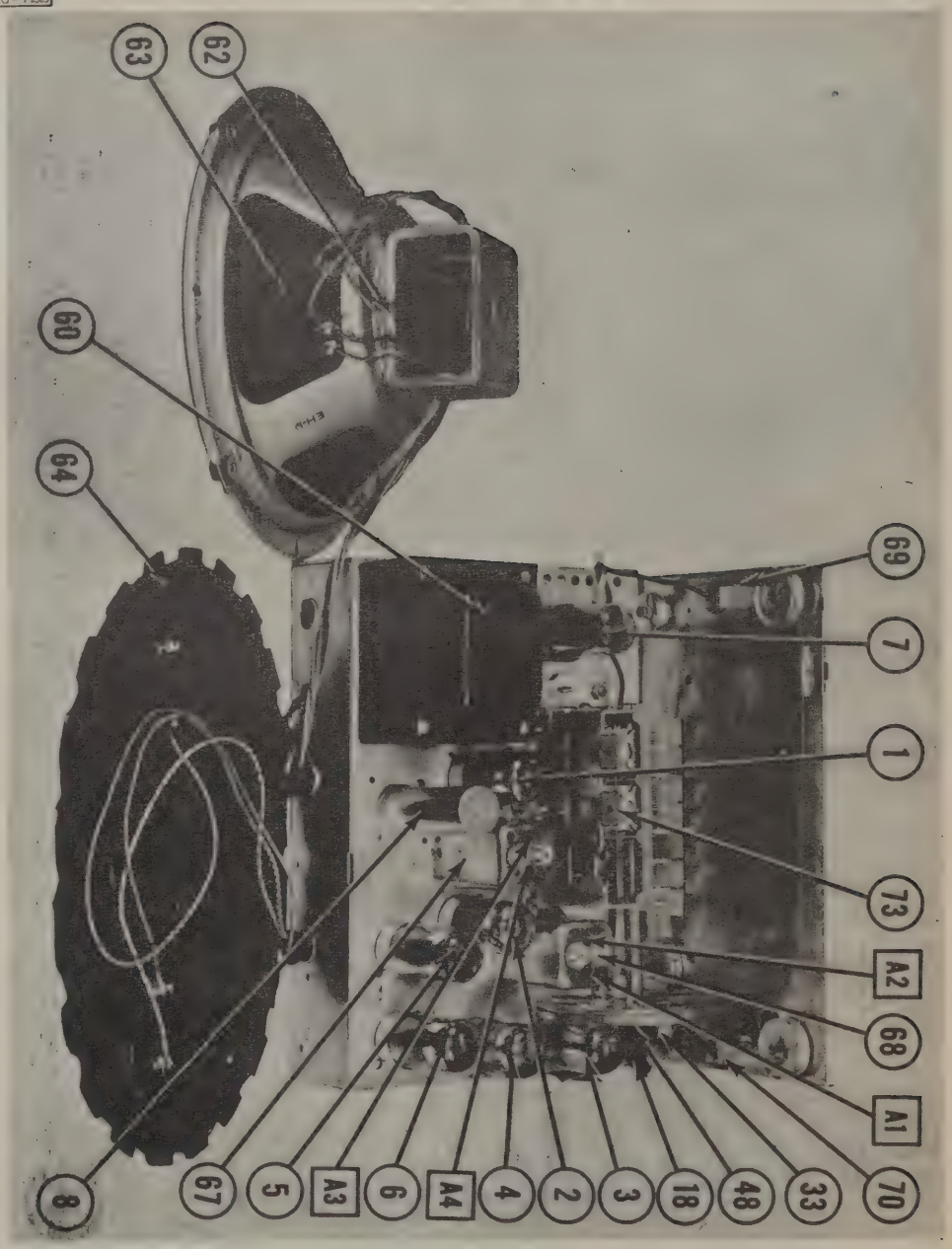
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TEMPLE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	15	450		UP6BJ38	FP234	DY-2x20-450	EL-220	AF44J	■ Filter*
B	15	450							▲ "
9	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Line Bypass
10	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Tone Compensation
11	.005	1000		MD16D5	TP459	TM-10-005	TR-25	1084-005	Output Plate Bypass
12	.005	1000		MD16D5	TP459	TM-10-005	TR-25	1084-005	" " "
13	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	Tone Compensation
14	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Audio Coupling
15	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	" "
16	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Audio Plate Bypass
17	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Audio Coupling
18	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	Tone Compensation
19	.003	600		DT6D3	TP406	S-6-003	TC-23	684-003	" "
20	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	Audio Coupling
21	.001	400		DT6D1	TP405	S-6-001	TC-21	484-001	Tone Compensation
22	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Screen Bypass
23	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
24	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Conv. Plate Decoup.
25	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Conv. Screen Bypass
26	.05	200		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
27	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Output Grid Filter
28	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Audio Grid Filter
29	33	500							AVC Diode Coupling
30	470	500		5W5T5	MC240	MO.5-347	1FM-35	1468-0005	Conv. Screen Bypass
31	47	500		5W5Q5	MC225	MO.5-447	1FM-45	1468-00005	Osc. Grid Capacitor
32	5100	300							Fixed Padder

*On models using a permanent magnet speaker a 16-16-16 MFD filter is used.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
33A	1 Meg.	1	RP8-105				Volume Control
B	Shaft		Not Req.				Attach to 33A per instructions
34A	500KΩ	1	RP5-2	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 34A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	TEMPLE PART No.	IRC PART No.	
35	100Ω	½		BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
36	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
37	10KΩ	2		BT-2-10K	Br.-Blk.-Or. Converter Screen Dropping
38	2200Ω	½		BTS-2200	Red-Red-Red Decoupling
39	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
40	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
41	150Ω	½		BW-½-150	Br.-Grn.-Br. IF Cathode
42	27KΩ	2		BT-2-27K	Red-Vi.-Or. Screen Dropping
43	39KΩ	½		BTS-39K	Or.-White-Or. Bleeder
44	47KΩ	½		BTS-47K	Yl.-Vi.-Or. RF Filter
45	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
46	120KΩ	½		BTS-120K	Br.-Red-Yl. Series Phono
47	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. Phono Shunt
48	68KΩ	½		BTS-68K	Blue-Gray-Or. Tone Compensation
49	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AF Grid
50	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
51	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
52	18Ω	½		BW-½-18	Br.-Gray-Blk. Phase Inverter Cathode
53	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Grid
54	22KΩ	1		BTA-22K	Red-Red-Or. Phase Inverter Plate Load
55	330Ω	1		BW-1-330	Or.-Or.-Br. Output Cathode
56	330Ω	1		BW-1-330	Or.-Or.-Br. Output Cathode
57	330KΩ	½		BTS-330K	Or.-Or.-Yl. Output Grid
58	330KΩ	½		BTS-330K	Or.-Or.-Yl. Output Grid
59A	500Ω	17		AB-500	Filter-See Note
B	850Ω			AB-800	" " "

Note-Used only in models using PM speaker.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	TEMPLE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
60	117V AC @ .57A	600V CT @ .092A	4.7V AC @ 2.0A	6.0V AC @ 2.3A	TP-9	P-6013	T22R05	P-2953

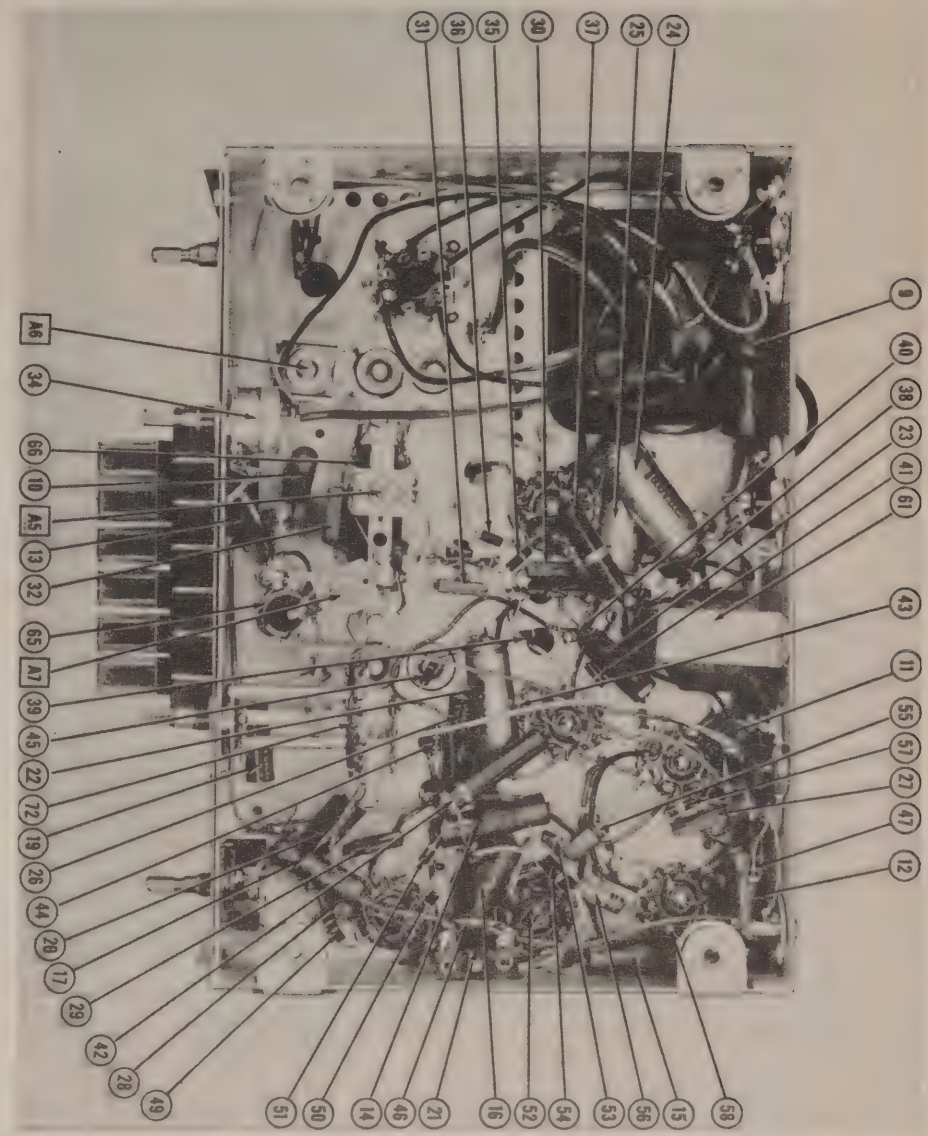
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TEMPLE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
61	11000Ω CT	3.8Ω	520Ω CT	.4Ω	TA-8	A-3823†	T22S47†	A-2936	†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	VC IMP.	TEMPLE PART No.	JENSEN PART No.		
62A	750Ω	3.8Ω	EH-9	ST-175 Mod. F10-S		
B			EH-14			Alternate PM Speaker
	CONE DIA.	VC DIA.				
63	9½"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

CHASSIS—BOTTOM VIEW



TEMPLE MODEL G-722

TEMPLE MODEL G-722

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TEMPLE PART No.	REPLACEMENT DATA MEISSNER PART No.
64	Loop Ant.	.1Ω	1Ω	LL-9	
65	SW Ant.Coil	1Ω	0Ω	LR-4	14-1044
66A	BC Osc.Coil	1Ω	5Ω	LO-4	
B	SW Osc.Coil	.2Ω	0Ω		
67	Input IF	15Ω	15Ω	TM2-4	16-6658
68	Output IF	15Ω		TM2-5	16-6670

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA TEMPLE PART No.	REPLACEMENT DATA	INSTALLATION NOTES
69	Bayonet	7.5	0.2	White			Type 51
70	"	"	"	"			"
71	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	TEMPLE PART No.	NOTES
72	Bandswitch	SR-9	
73	Tuning Cap.	CV-9	(17-522 MMF, 17-522 MMF)
A5	Trimmer Cap.	CT1-2	BC Osc. Adj. (2.2-40 MMF)
A6	Padder Cap.	CX2-1	BC Osc. Padder
A7	Trimmer Cap.	CT1-2	SW Ant. Adj. (2.2-40 MMF)

PUSHBUTTON ADJUSTMENTS

1. Turn on receiver and allow to warm up for ten or fifteen minutes.
2. Remove plastic buttons from button shafts.
3. Loosen screw under button a few turns.
4. Carefully tune in desired station and fully depress pushbutton shaft while holding tuning control.
5. Tighten firmly the set screw on this shaft.
6. Set up remaining buttons as outlined above in Steps 3, 4 and 5.

DISASSEMBLY INSTRUCTIONS

1. Remove four pushon type control knobs.
2. Remove loop antenna plug from chassis.
3. Remove phono-pickup plug from chassis.
4. Remove phono-motor plug from chassis.
5. Remove speaker plug from chassis.
6. Remove four hex nuts holding speaker in cabinet, Remove speaker from cabinet.
7. Remove four bolts holding chassis in cabinet. Remove chassis from cabinet.
8. Remove staples holding loop antenna in chassis. Unsolder two leads to shortwave antenna and remove loop antenna from chassis.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7Q7	0V.	200VDC	115VDC	-6VDC$	0V.	-.1VDC	0V.	6VAC
2	7H7	0V.	230VDC	87VDC	0V.	0V.	-.1VDC	1.2VDC	6VAC
3	7B6	0V.	115VDC	-.1VDC	0V.	-.1VDC	-.1VDC	0V.	6VAC
4	7C7	0V.	145VDC	87VDC	0V.	0V.	0V.	1.4VDC	6VAC
5	7C5	0V.	225VDC	230VDC	0V.	0V.	0V.	12.5VDC	6VAC
6	7C5	0V.	225VDC	230VDC	0V.	0V.	0V.	12.5VDC	6VAC
7	5Y3GT	0V.	300VDC	0V.	300VAC	0V.	300VAC	0V.	300VDC

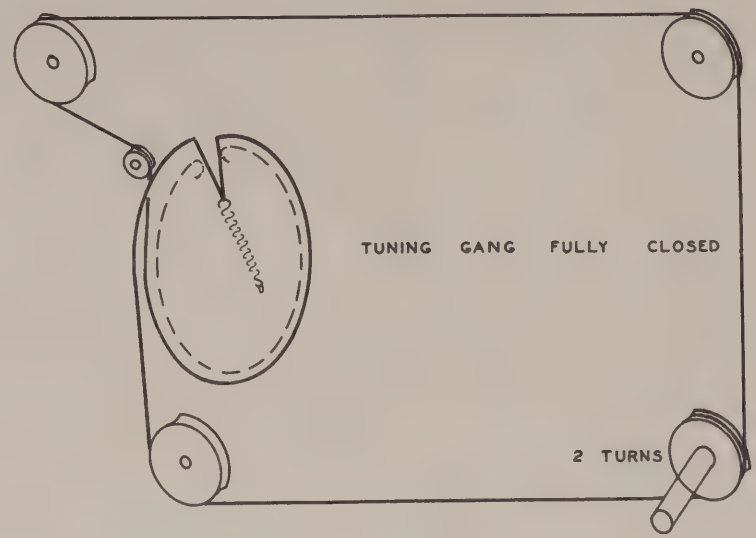
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7Q7	0Ω	70KΩ	80KΩ	21KΩ	0Ω	3.5 Meg.	.5Ω	.1Ω
2	7H7	0Ω	70KΩ	38KΩ	0Ω	0Ω	1 Meg.	160Ω	.1Ω
3	7B6	0Ω	300KΩ	4 Meg.	0Ω	1.1 Meg.	5 Meg.	0Ω	.1Ω
4	7C7	0Ω	90KΩ	38KΩ	0Ω	0Ω	100KΩ	19Ω	.1Ω
5	7C5	0Ω	70KΩ	70Ω	0Ω	100KΩ	430KΩ	185Ω	.1Ω
6	7C5	0Ω	70KΩ	70KΩ	0Ω	100KΩ	430KΩ	185Ω	.1Ω
7	5Y3GT	INF.	70KΩ	INF.	185Ω	INF.	180Ω	INF.	70KΩ

$TAKEN WITH VACUUM TUBE VOLTMETER.

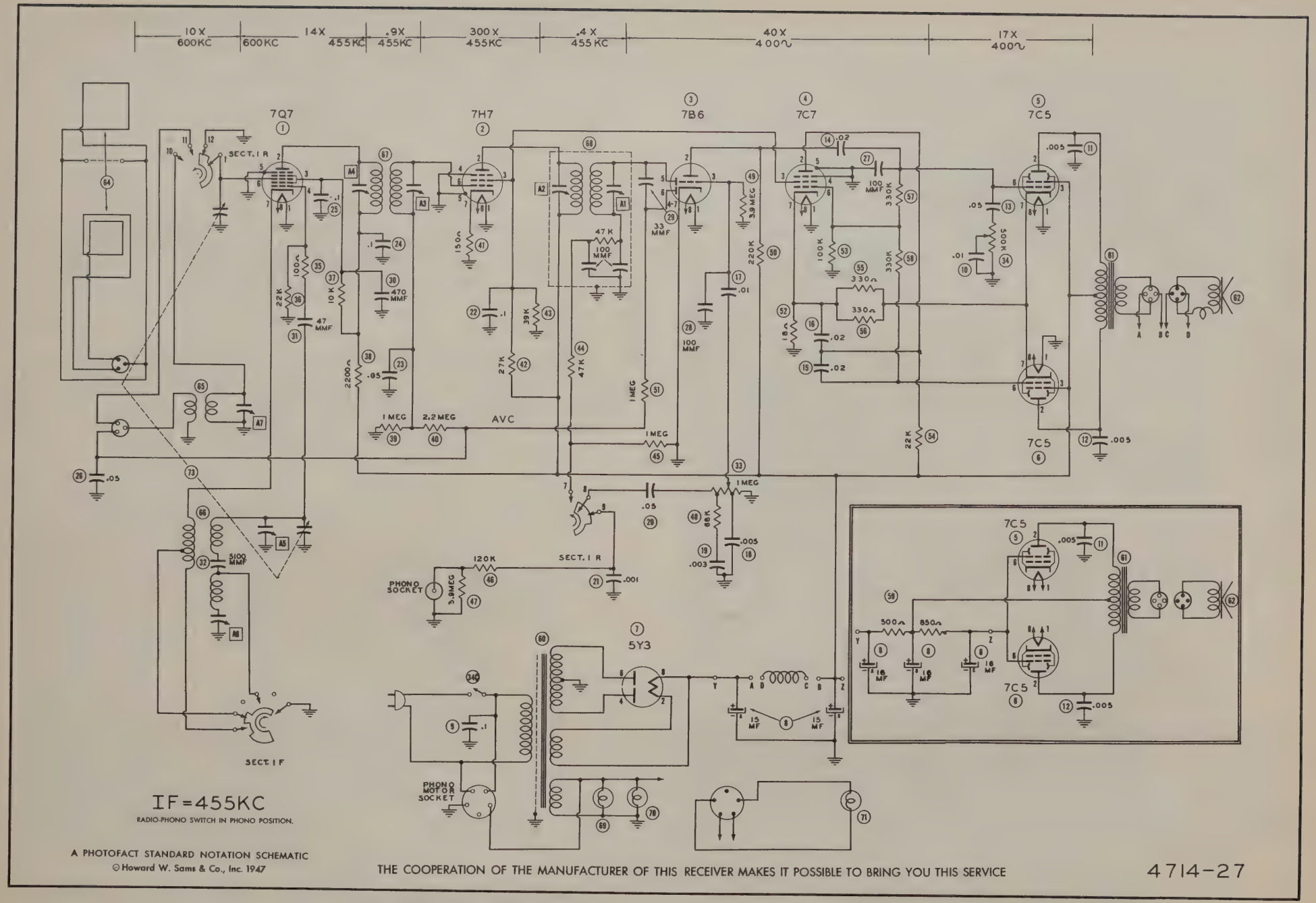
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DIAL CORD DRIVE

DATE 9/47 SET 2A FOLDER #4714-47



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

TONE PAK MODEL AC8HF

TRADE NAME	Tone Pak, Model AC8HF
MANUFACTURER	Electro-Technical Laboratories Inc., 321 Fort Lee Road, Leonia, N.J.
TYPE SET	AC Operated 3 Channel 4 Tube Amplifier
TUBES (FOUR)	Types, 6SJ7GT Mic. Amp., 6SJ7GT AF Amp., 6L6GA Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .600 Amps. @ 117V AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SJ7GT	0V.	0V.	0V.	0V.	1.7VDC	31VDC	6.2VAC	43VDC
2	6SJ7GT	0V.	0V.	0V.	0V.	1.6VDC	33VDC	6.2VAC	48VDC
3	6L6GA	0V.	0V.	250VDC	260VDC	0V.	260VDC	6.2VAC	25VDC
4	5Y3GT	0V.	270VDC	0V.	325VAC	0V.	325VAC	0V.	270VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SJ7GT	0Ω	0Ω	0Ω	1 Meg.	2.5KΩ	1.1 Meg.	.1Ω	330KΩ
2	6SJ7GT	0Ω	0Ω	0Ω	700KΩ	2.5KΩ	1.1 Meg.	.1Ω	330KΩ
3	6L6GA	INF.	0Ω	70KΩ	70KΩ	240KΩ	70KΩ	.1Ω	200Ω
4	5Y3GT	INF.	70KΩ	INF.	220Ω	INF.	230Ω	INF.	70KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TONE PAK
MODEL AC8HF

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		TONE PAK PART No.	STANDARD REPLACEMENT		
1	Mic. Amp.	6SJ7GT	6SJ7GT	8N	
2	AF Amp.	6SJ7GT	6SJ7GT	8N	
3	Power Output	6L6GA	6L6GA	7AC	
4	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	TONE PAK PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
5A	20	350		UP2245C	FP339	DY-312	EL-322	AF44J4A	Filter - Red
B	20	350							" - Red
C	20	25							Cath. Bypass-Blue
6	8	250		BR825	TC52	M-8-250	UT-82	PRS250-8	Filter
7	25	50		BR255	TC36	M-25-50	TA-525	PRS50-25	Cath. Bypass
8	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Audio Coupling
9	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Tone Compensation
10A	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Bypass
B	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Screen Bypass
C	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	" "
11	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling

CONTROLS

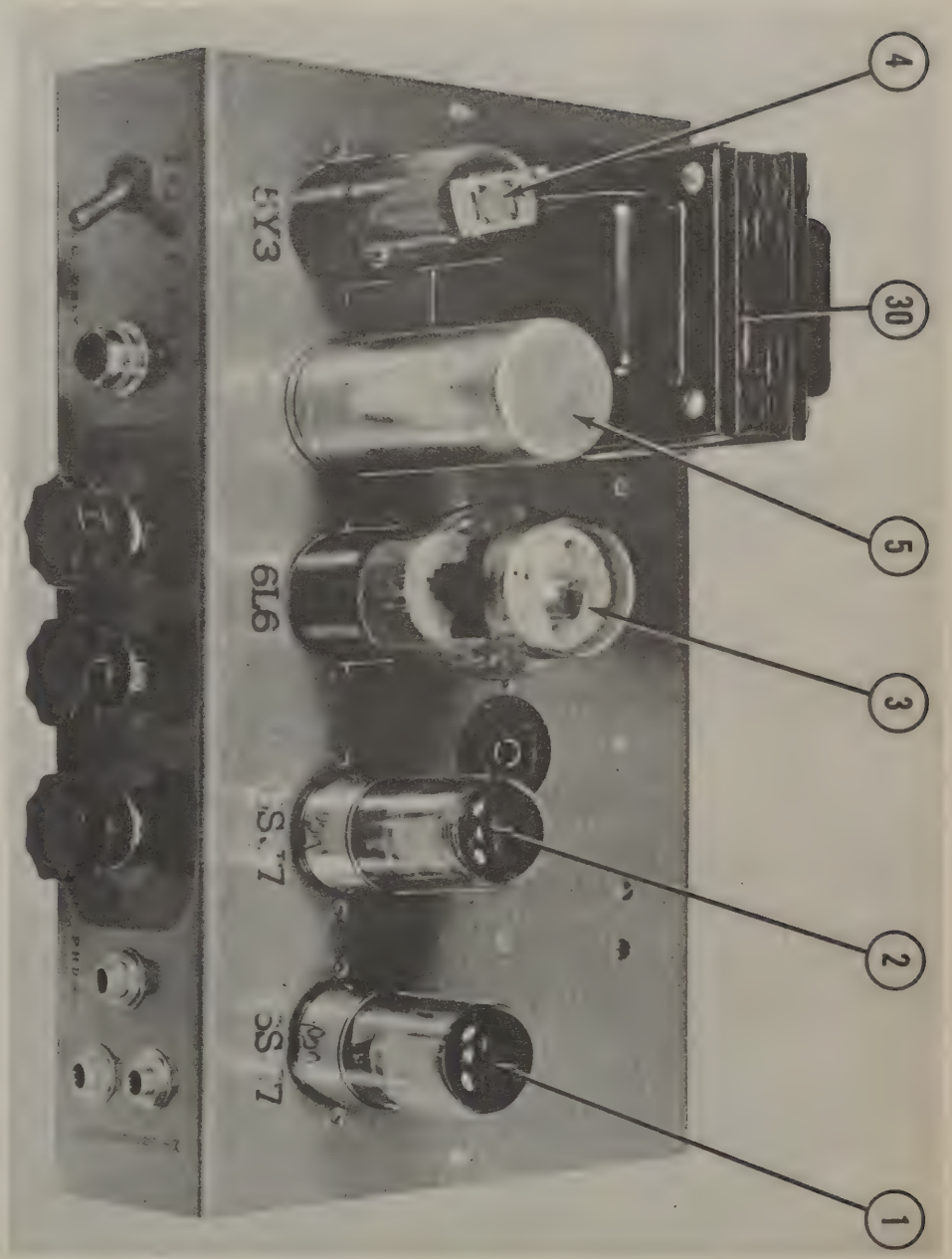
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST-ANCE	WATTS	TONE PAK PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
12A	1 Meg.	1		UM159	D11-137	M-61-S	Mike Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 12A per instructions
13A	1 Meg.	1		UM159	D11-137	M-61-S	Phono Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 13A per instructions
14A	1 Meg.	1		MR53	D13-137	M-63-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 14A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	TONE PAK PART No.	IRC PART No.	
15	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Mic. Amp. Grid
16	2500Ω	½		BTS-2700	Red-Grn.-Red Mic. Amp. Cathode
17	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Mic. Amp. Screen Dropping
18	240KΩ	½		BTS-220K	Red-Yl.-Yl. Mic. Amp. Plate Load
19	240KΩ	½		BTS-220K	Red-Yl.-Yl. Isolation
20	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Isolation
21	2500Ω	½		BTS-2700	Red-Grn.-Red AF Cathode
22	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Screen Dropping
23	240KΩ	½		BTS-220K	Red-Yl.-Yl. AF Plate Load
24	240KΩ	½		BTS-220K	Red-Yl.-Yl. Output Grid
25	200Ω	3		AB-200	Red-Blk.-Br. Output Cathode
26	40KΩ	½		BTS-39K	Yl.-Blk.-Or. Feedback
27	25KΩ	½		BTS-27K	Red-Grn.-Or. Filter
28	2500Ω	½		BTS-2700	Red-Grn.-Red Filter - See Note
29	56Ω	½		BW-½-56	Grn.-Blue-Blk. Parasitic Suppressor

Note-Some models use 1800Ω in this application. IRC replacement BTS-1800.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	TONE PAK PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	INSTALLATION NOTES
30	117V AC @ .6A	650V CT @ .112A	4.8V AC @ 2.0A	6.2V AC @ 1.5A		P-4080*	T22R32*	P-3153*	*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TONE PAK PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
31	3500Ω	6-8Ω	115Ω	.5Ω					

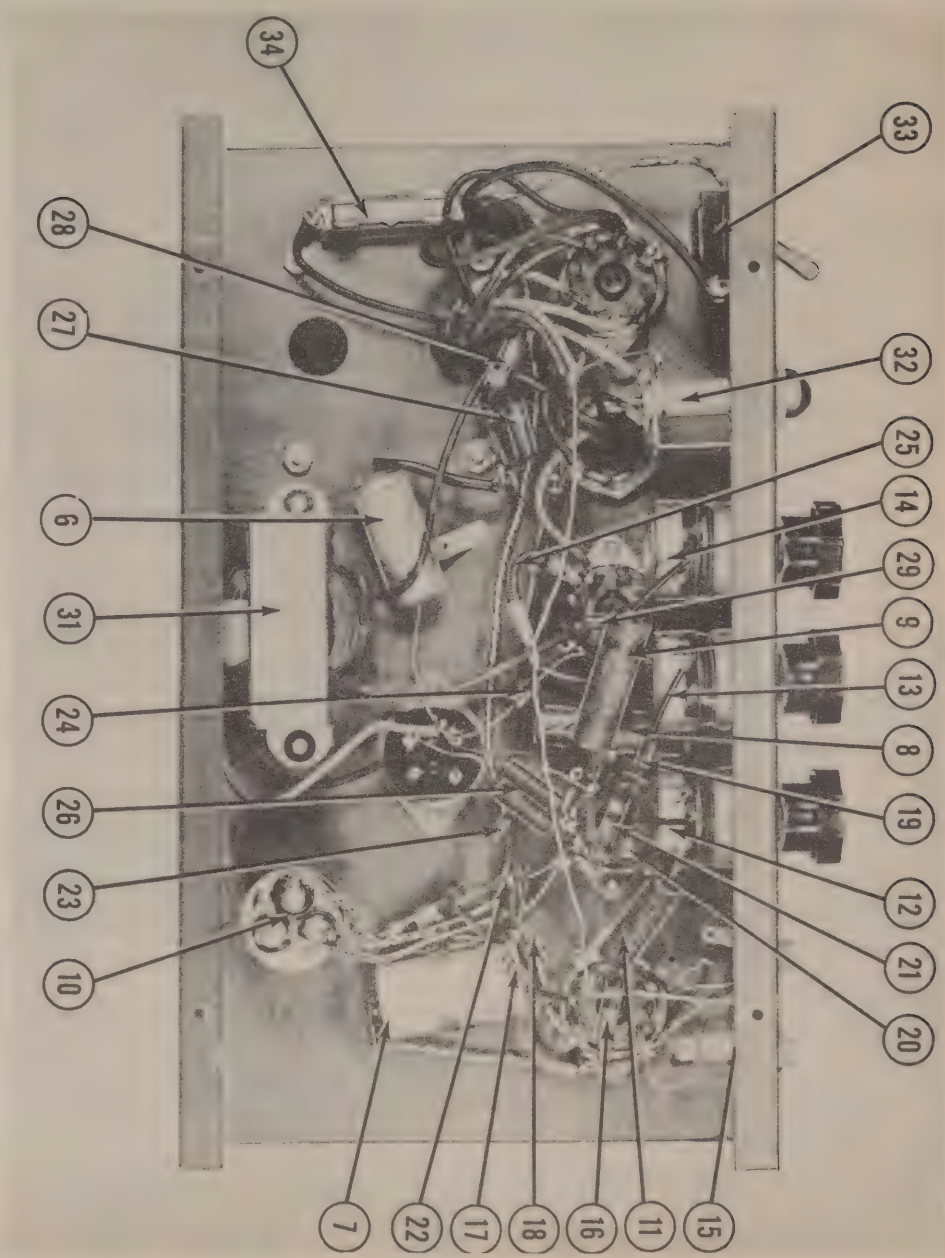
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TONE PAK PART No.		
32	Bayonet	6-8	0.25	Blue			Type 44

MISCELLANEOUS

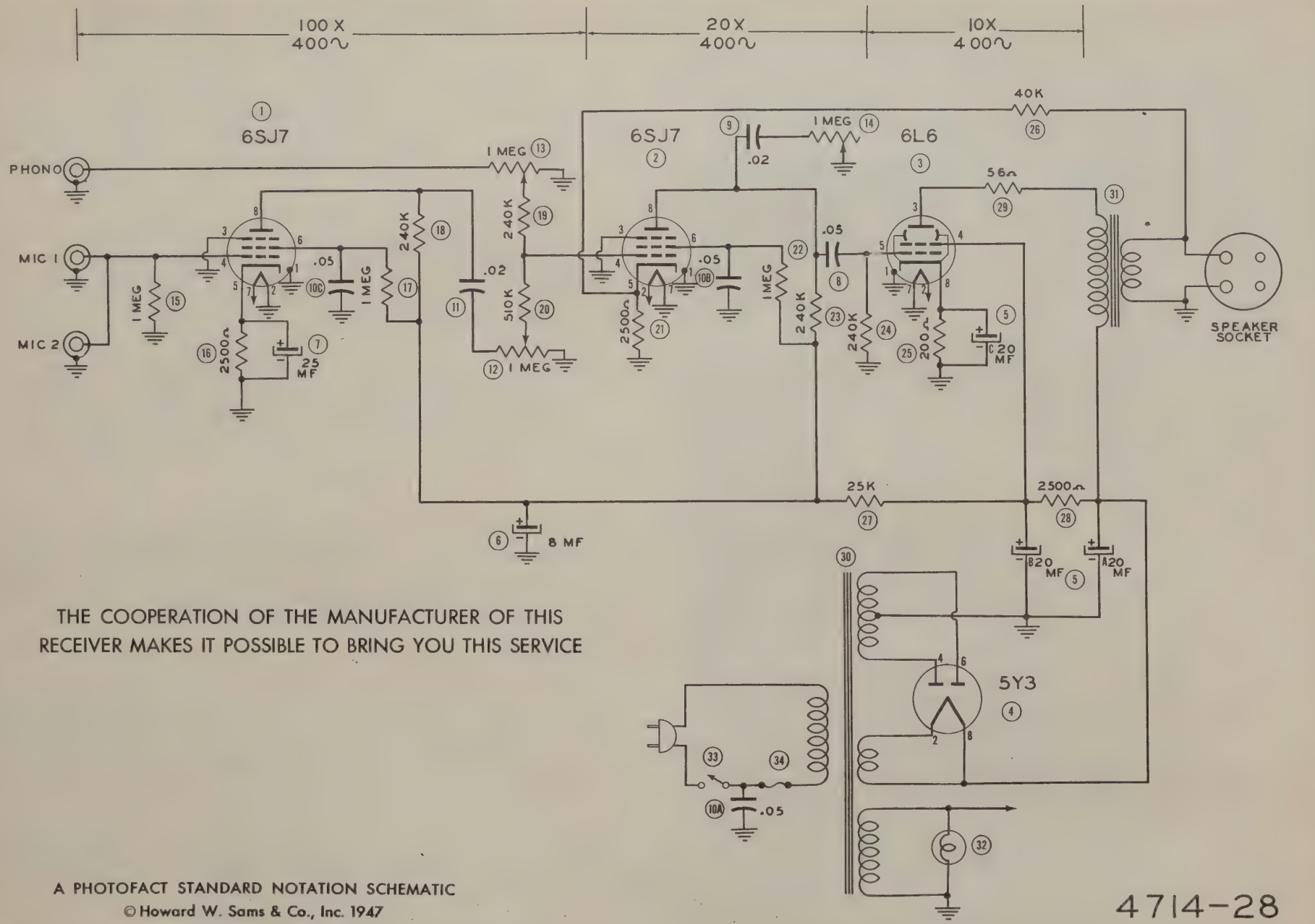
ITEM No.	PART NAME	TONE PAK PART No.	NOTES
33	Switch		On-Off
34	Fuse		2 Ampere

CHASSIS—BOTTOM VIEW



TONE PAK MODEL AC8HF

TONE PAK MODEL AC8HF



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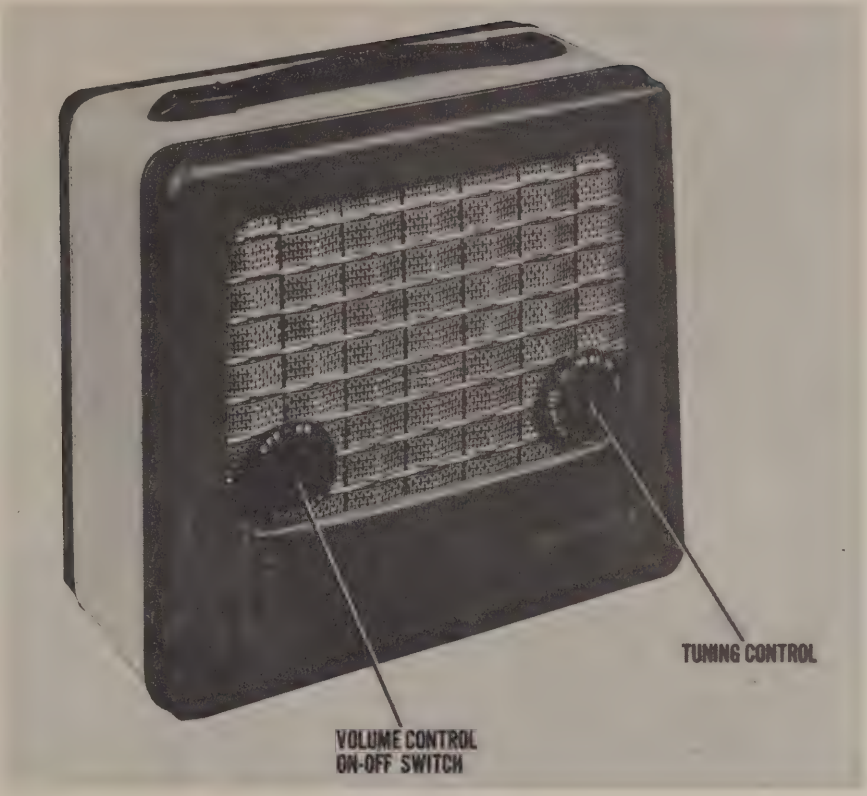
4714-28

TRUETONE
MODEL D-3720 BATTERY OPERATED



TRUETONE D-3720

TRADE NAME	Truetone, Model D-3720
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output.
POWER SUPPLY RATING	110-120 Volts AC-DC or 7½ Volt "A" Supply & 90 Volt "B" Supply .200 Amp. @ 117 Volts AC or 54MA @ 7½ Volts DC & 14 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Disconnect loop leads and remove chassis from cabinet. Connect a 100KΩ resistor across the loop leads for Step 1 & 2. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning capacitor. Low side to B-.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation.
2	.1 MFD.	"	1600KC	"	"	A5	Adjust for maximum output.
3	250 MMF	High side to ext. ant. lead. Low side to ext. ground lead.	1400KC	Tune for maximum output.	"	A6	Replace chassis in cabinet and connect loop. Slide chassis back far enough to make A6 accessible. Adjust for maximum output.
4	250 MMF	"	600KC	"	"	A7	Adjust for maximum output. Recheck A6 at 1400KC.

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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL 3720
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3Q4	3Q4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	AA-18-281	UP7DJ191†	FP363	DY419	EL224	AF866D4A	▲ Filter
B	20	150							■ "
C	20	150							▲ "
D	100	25		BRH251	TC2501	M-100-25	UHC-102	PRS25-100	Fil. Bypass
6	.05	400	A16-158	DT4S5	TP426	MPW-4-05	TC-15	484-05	Line Bypass
7	.1	200	A16-157	DT4P1	TP428	S-4-1	TC-1	484-.1	Pwr. Supp. Bypass
8	.005	150	A16-166	DT6D5	TP408	S-6-005	TC-25	484-005	Output Plate Bypass
9	.005	150	A16-166	DT6D5	TP408	S-6-005	TC-25	484-005	Audio Coupling
10	.005	150	A16-166	DT6D5	TP408	S-6-005	TC-25	484-005	" "
11	.01	200	A16-165	DT4S1	TP421	S-4-1	TC-1	484-01	Audio Screen Bypass
12	.002	600	A16-155	DT6D2	TP405	S-6-002	TC-22	684-002	IF Grid Filter
13	.01	200	A16-165	DT4S1	TP421	S-4-01	TC-11	484-01	Conv. Screen Decoup.
14	.1	400	A16-160	DT4P1	TP428	S-4-1	TC-1	484-.1	Filament Bypass
15	.002	600	A16-155	DT6D2	TP405	S-6-002	TC-22	684-002	AVC Filter
16	.1	400	A16-160	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
17	50	500	A15-175	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Audio Plate Bypass
18	100	500	A15-188	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
19	100	500	A15-188	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
20	50	500	A15-175	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Cap.
21	100	500	A15-188	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Coupling

†Do not use bypass section.

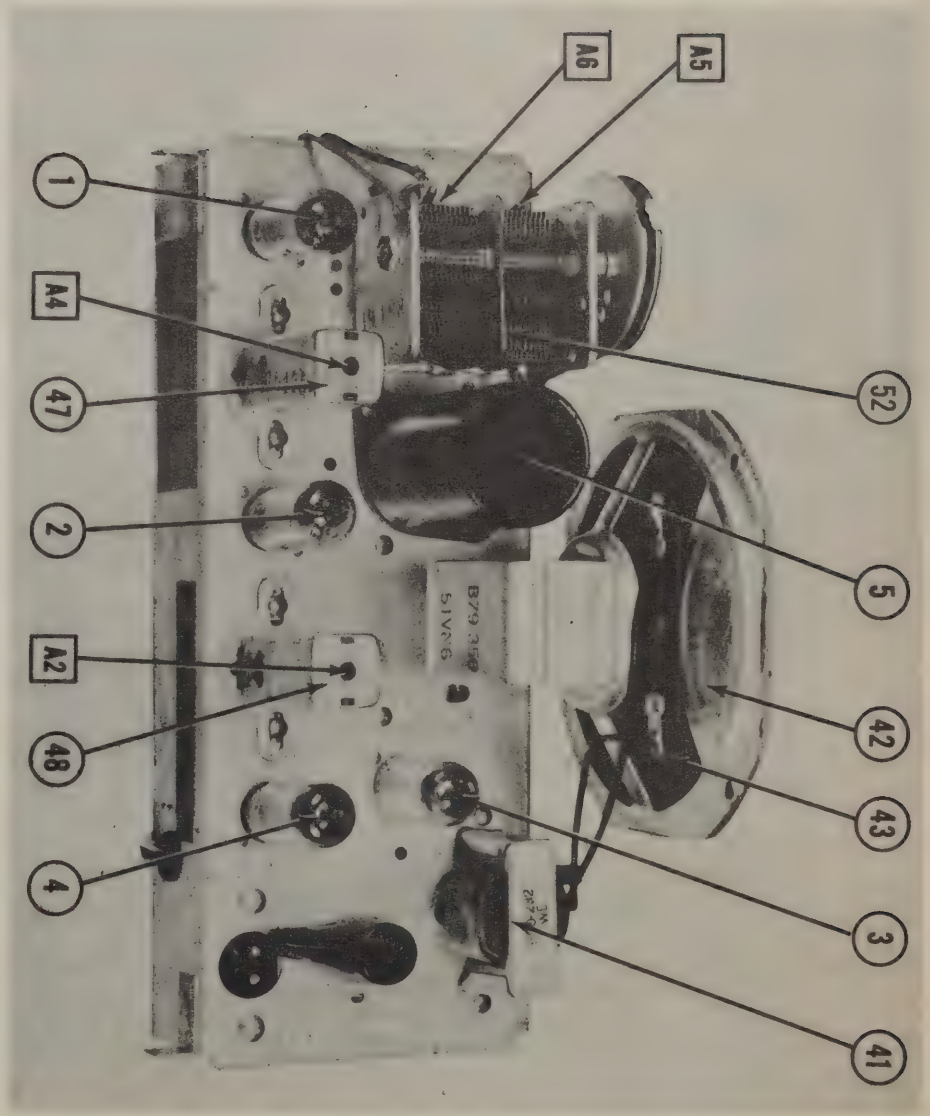
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	1 Meg.	1	A24-170	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
23	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. Converter Grid
24	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. Line Isolation
25	820Ω	½	A60-709	BTS-820	Gray-Red-Br. Filament String
26	100KΩ	½	A60-671	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
27	3900Ω	½	A60-710	BTS-3900	Or.-White-Red Converter Screen
28	10 Meg.	½	A60-673	BTS-10 Meg.	Br.-Blk.-Blue IF Grid
29	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
30	47KΩ	½	A60-685	BTS-47K	Yl.-Vi.-Or. Diode Filter
31	1000Ω	½	A60-675	BTS-1000	Br.-Blk.-Red Filament String
32	10 Meg.	½	A60-673	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
33	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
34	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
35	470Ω	½	A60-707	BTS-470	Yl.-Vi.-Br. Filament String
36	680Ω	½	A60-708	BTS-680	Blue-Gray-Br. Filament String
37A	910Ω	10	A60-713		Filament String
B	910Ω				Filament String
38	75Ω	3	A60-712	AB-75	Vi.-Grn.-Blk. Surge Limiter
39	2200Ω	½	A60-714	BTS-2200	Red-Red-Red Filter
40	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. AF Screen Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
41A B	8400Ω	3.4Ω	580Ω	.7Ω	B80-232 A80-228	A-3822	T22S47	A-2932	Alternate Transformer

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107*		*Fabricate new mounting bracket.
42	PM	3.4Ω	B79-350	Mod. P5-V		
	CONE DIA.	VC DIA.				
43	4″	½″	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

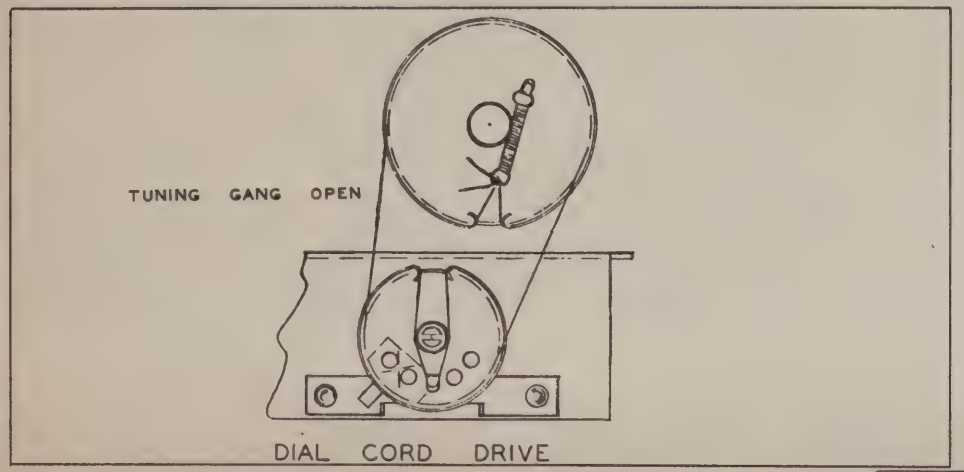
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
44	Loop Ant.	.1Ω	1Ω			
45	Loop Loading Coil		.8Ω	A10-476		
46	Osc. Coil	2Ω	7Ω	B10-460	14-1040	
47	Input IF	22Ω	22Ω	C10-475		Alternate Part No. C10-462,C10-473,C10-471
48	Output IF	22Ω	22Ω	C10-475		Alternate Part No. C10-463,C10-474,C10-472

BATTERIES

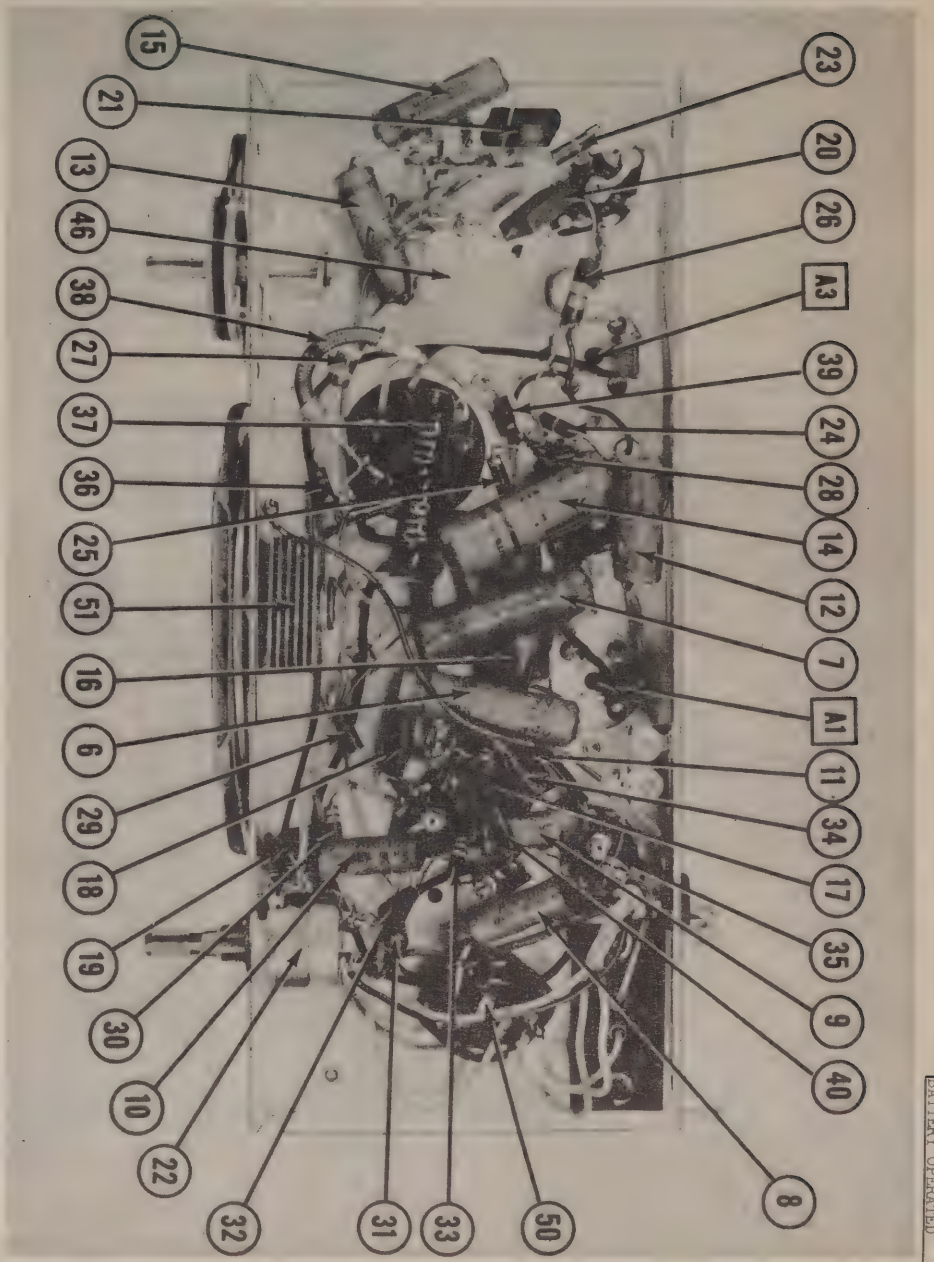
ITEM No.	VOLTAGE	TRUETONE PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
49	7½V "A" 90V "B"	Wizard B6460			#753	

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
50	Switch	B69-173	Power Change-Over
51	Rectifier	A83-391	Selenium
52	2 Gang Var. Cap.	B19-188	18-469 MMF, 42-224 MMF.



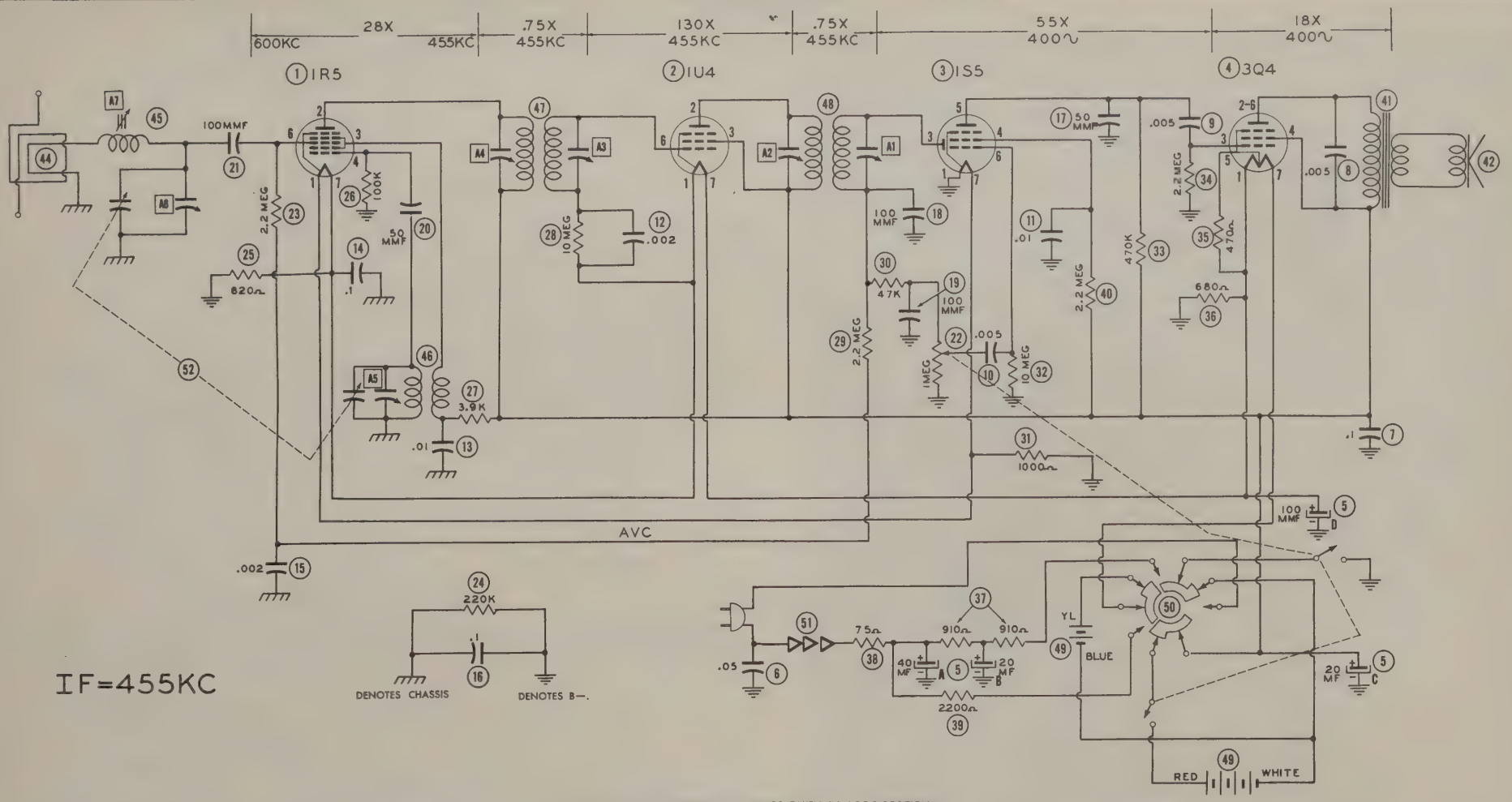
CHASSIS—BOTTOM VIEW



TRUETONE MODEL 5720
BATTERY OPERATED

DATE 9/47 SET 24 FOLDER #4714-29

TRUETONE MODEL 5720
BATTERY OPERATED



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	1.7VDC	85VDC	72VDC	-5.8VDC§	1.7VDC	0V.	3.2VDC
2	1U4	3.2VDC	85VDC	85VDC	85VDC	3.2VDC	0V.	4.8VDC
3	1S5	0V.	-.3VDC	-.3VDC	21VDC	22VDC	0V.	1.7VDC
4	3Q4	4.8VDC	83VDC	0V.	85VDC	6.4VDC	83VDC	8VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	4KΩ	8KΩ	100KΩ	*	6 MEG.	*
2	1U4	*	4KΩ	4KΩ	4KΩ	*	10 MEG.	*
3	1S5	*	1.1 MEG.	1.1 MEG.	2.2 MEG.	470KΩ	10 MEG.	*
4	3Q4	*	5KΩ	2.6 MEG.	4KΩ	*	5KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4714-29

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to low side of the volume control.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

U. S. TELEVISION (CLEARSONIC) MODELS 5A66, 5B66, 5C66, 5D66MPA

U. S. TELEVISION (CLEARSONIC) MODELS 5A66, 5B66, 5C66, 5D66MPA

MODEL 5D66

MODEL 5C66

U. S. TELEVISION (CLEARSONIC) MODELS 5A66, 5B66, 5C66, 5D66MPA

TRADE NAME	U. S. Television (Clearsonic) Models 5A66, 5B66, 5C66, 5D66MPA
MANUFACTURER	U. S. Television Mfg. Co., 3 West 61st St., New York, N.Y.
TYPE SET	AC-DC Superheterodyne (Models 5A66, 5B66, 5C66), Model 5D66MPA (AC only) Radio-Phono Combination.
TUBES (FIVE)	12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1620KC RATING .250 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. The trimmer on the oscillator section of the tuning capacitor is pre-set at the factory and normally need not be adjusted. However, if it is impossible to make the receiver calibrate, tighten this trimmer and back off one full turn. Receiver should now calibrate by adjusting A5.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of front section of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200 MMF	High side to ext. ant. Low side to ext. ground.	1600KC	1600KC	"	A5	Adjust for maximum output.
3	200 MMF	"	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

U. S. TELEVISION (CLEARSONIC)
5A66, 5B66, 5C66, 5D66MPA

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: U.S. TELEVISION PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: U.S. TELEVISION PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6	40	150	PA4300-1	BR4015	TC48	M-40-150	UT-401	PRS150-40	Filter
7	40	150	PA4300-1	BR4015	TC48	M-40-150	UT-401	PRS150-40	"
8A	16	150		BRD2215	TCD45	DSB2x20-150	TA-116	PRSA150-20-20	"
B	16	150							Cath. Bypass
9	.05	600	PC40GM-503	DT6S5	TP415	MPW-6-05	TC-15	684-05	Line Filter
10	.01	400	PC40GL-103	DT4S1	TP421	S-4-01	TC-11	484-01	Output Plate Bypass
11	.01	400	PC40GL-103	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
12	.05	200	PC40GK-503	DT4S5	TP426	S-4-05	TC-15	484-05	AF Plate Decoup.
13	.01	400	PC40GL-103	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
14	.05	200	PC40GK-503	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
15	.2	400	PC40GL-204	DT4P2	TP429	S-4-2	TC-2	484-.2	Line Isolation
16	510	500	PA60G-511	5W5T5	MC245	MO.5-35	1FM-35	1468-0005	AF Plate Bypass
17	510	500	PA60G-511	5W5T5	MC245	MO.5-35	1FM-35	1468-0005	Diode Filter
18	100	500	MC60G-101	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Cap.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: U.S. TELEVISION PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
19A	500KΩ	1/2	PA-4400-2	MR-48	D-13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 19A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

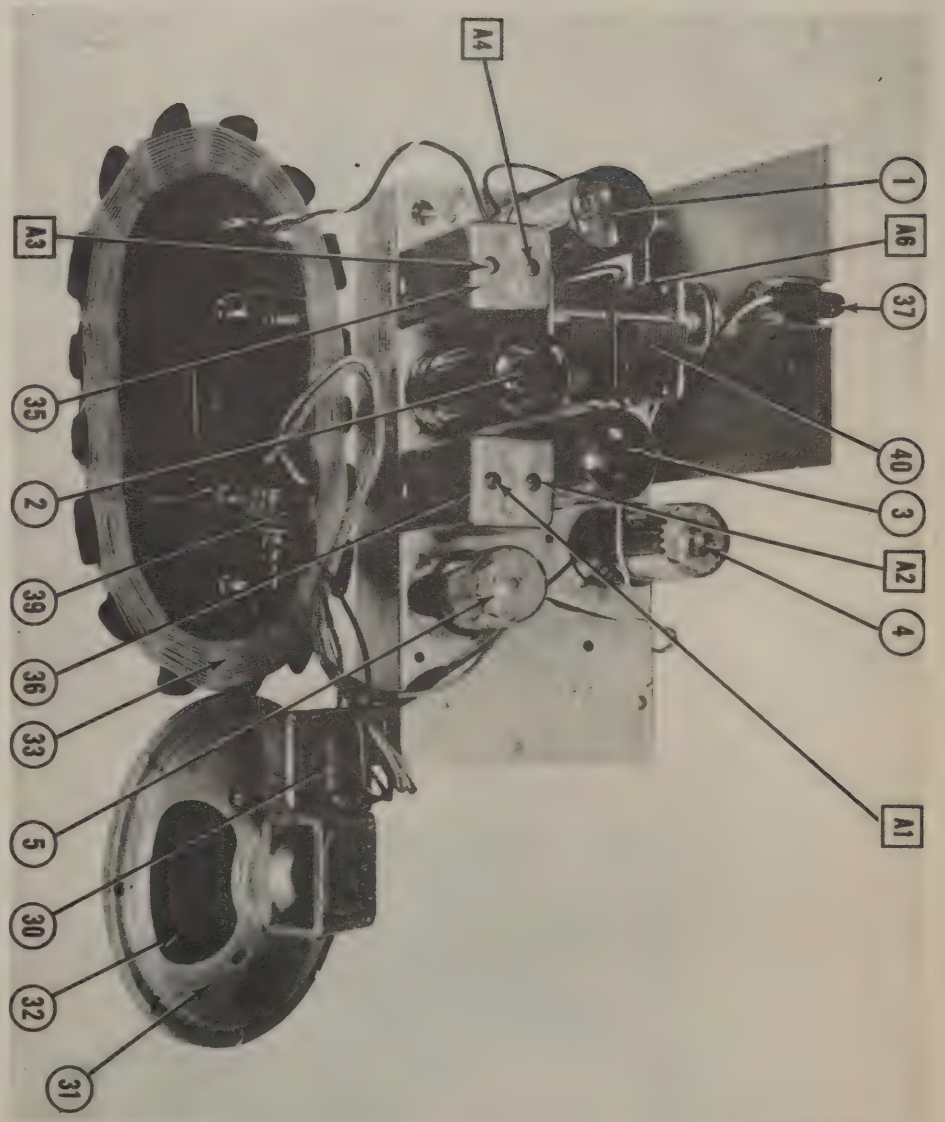
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: U.S. TELEVISION PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
20	10 Meg.	½	R1S-106	BTS-10 Meg.	Br.-Blk.-Bl. AVC Network
21	20KΩ	½	R1S-223	BTS-22K	Red-Blk.-Or. Osc. Grid
22	2 Meg.	½	R1S-225	BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
23	10 Meg.	½	R1S-106	BTS-10 Meg.	Br.-Blk.-Bl. AF Grid
24	330KΩ	½	R1S-334	BTS-330K	Or.-Or.-Yl. AF Plate Load
25	100KΩ	½	R1S-104	BTS-100K	Br.-Blk.-Yl. AF Plate Decoupling
26	510KΩ	½	R1S-514	BTS-470K	Grn.-Br.-Yl. Output Grid
27	150Ω	½	R1G-151	BW-½-150	Br.-Grn.-Br. Output Cathode
28	2200Ω	1	R2S-222	BTA-2200	Red-Red-Red Filter
29	390Ω	1	R2S-391	BTA-390	Or.-Wh.-Br. Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: U.S. TELE. PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
30	2300Ω	3.3Ω	186Ω	.5Ω	TR-2123-1	A-3876*	T22S45*	A-2928*	*Fabricate new mounting brkt

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA U.S. TELEVISION PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
31	PM	3.3Ω	PC-63000-3	Mod. P5-X		
	CONE DIA.	VC DIA.				
32	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA U. S.TELE. PART No.	REPLACEMENT DATA MEISSNER PART No.
33	Loop Ant.	.5Ω	1.5Ω	AB42206	
34	Osc. Coil		6Ω	AB42201-1	14-1040
35	Input IF	16Ω	16Ω	AB42202	16-6658
36	Output IF	15Ω	16Ω	AB42203	16-6660

DIAL LIGHT

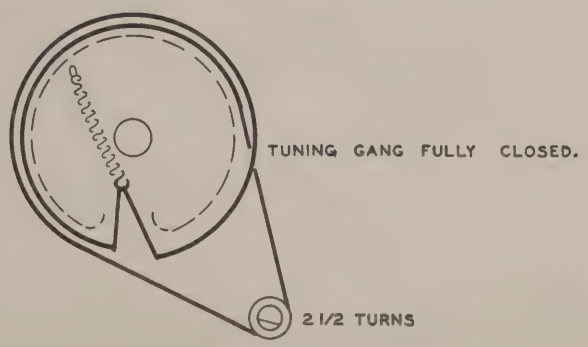
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA U.S. TELE. PART No.		INSTALLATION NOTES
37	Bayonet	6-8	0.15	Brown			Type 47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA U.S. TELE. PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
38		L-70	Model 5D66MPA only.

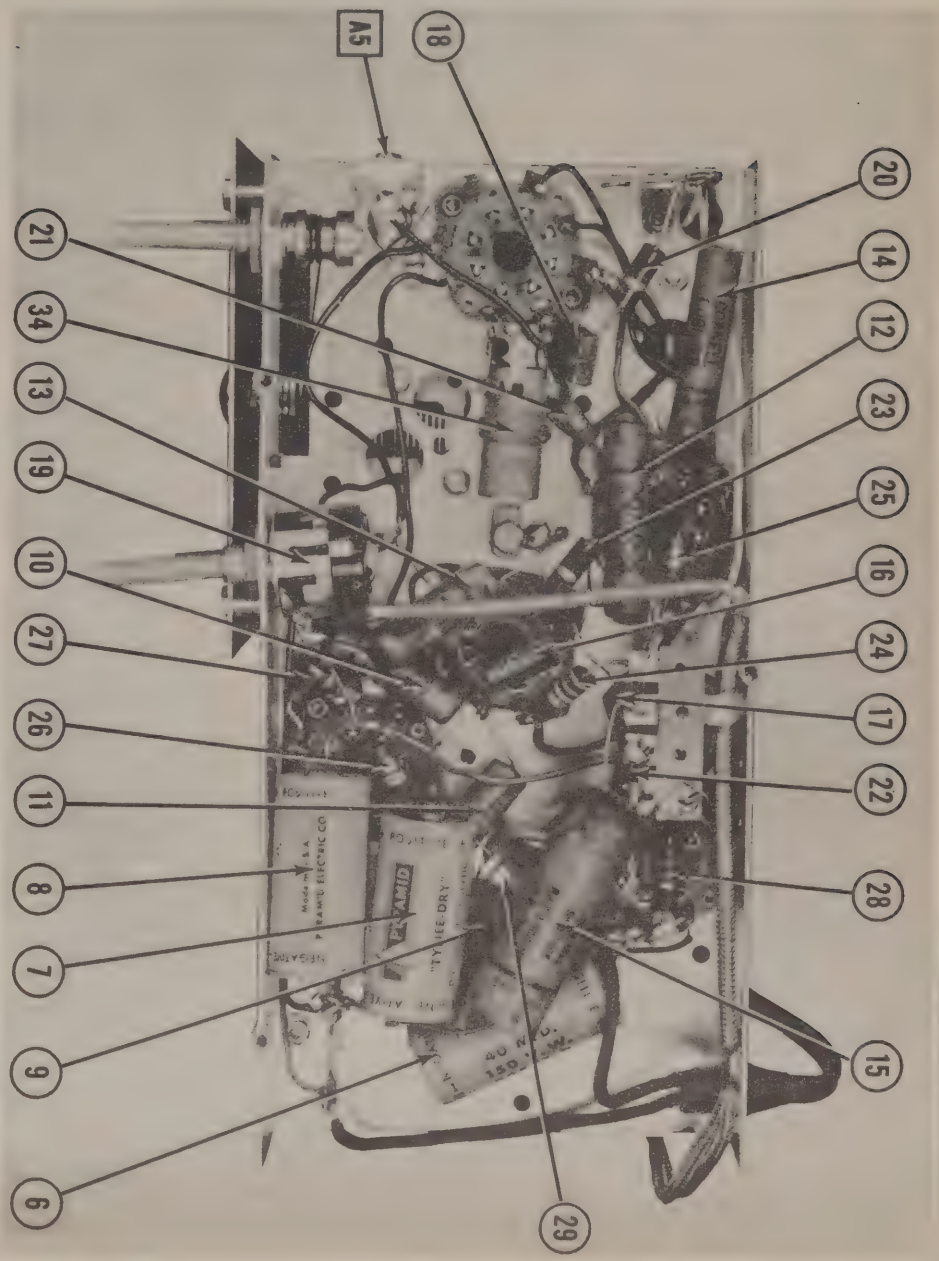
MISCELLANEOUS

ITEM No.	PART NAME	U.S. TELE. PART No.	NOTES
39	Switch		Radio-Phono Model 5D66MPA
40	Tuning Cap.	AB-40403	23-438 MMF, 20-185 MMF



DIAL CORD DRIVE

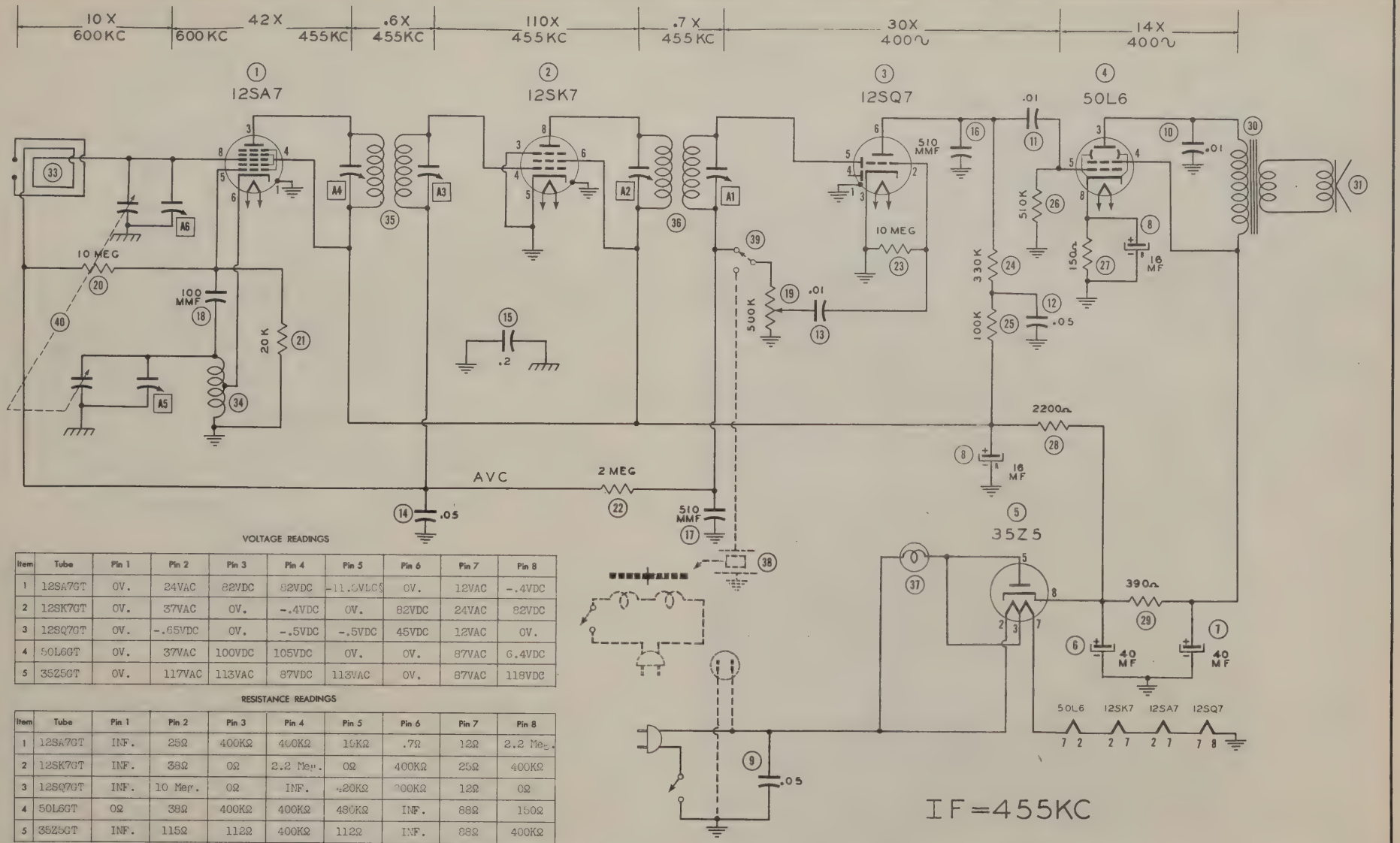
CHASSIS—BOTTOM VIEW



DATE 9/47 SET 24 FOLDER 4714-30

U. S. TELEVISION (CLEARSONIC)
5A66, 5B66, 5C66, 5D66MPA

U. S. TELEVISION (CLEARSONIC)
5A66, 5B66, 5C66, 5D66MPA



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	24VAC	82VDC	82VDC	-11.5VDC$	0V.	12VAC	-.4VDC
2	12SK7GT	0V.	37VAC	0V.	-.4VDC	0V.	82VDC	24VAC	82VDC
3	12SQ7GT	0V.	-.65VDC	0V.	-.5VDC	-.5VDC	45VDC	12VAC	0V.
4	50L6GT	0V.	37VAC	100VDC	105VDC	0V.	0V.	87VAC	6.4VDC
5	35Z5GT	0V.	117VAC	113VAC	87VDC	113VAC	0V.	87VAC	118VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	INF.	25Ω	400KΩ	400KΩ	19KΩ	.7Ω	12Ω	2.2 Meg.
2	12SK7GT	INF.	38Ω	0Ω	2.2 Meg.	0Ω	400KΩ	25Ω	400KΩ
3	12SQ7GT	INF.	10 Meg.	0Ω	INF.	420KΩ	300KΩ	12Ω	0Ω
4	50L6GT	0Ω	38Ω	400KΩ	400KΩ	480KΩ	INF.	88Ω	150Ω
5	35Z5GT	INF.	115Ω	112Ω	400KΩ	112Ω	INF.	88Ω	400KΩ

$TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4714-30

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

WATTERSON MODEL 4782
BATTERY OPERATED

WATTERSON MODEL 4782
BATTERY OPERATED

WATTERSON MODEL 4782

TRADE NAME	Watterson, Model 4782
MANUFACTURER	Watterson Radio Mfg. Corp., 2700 Swiss Ave., Dallas, Texas
TYPE SET	Battery Operated Superheterodyne Receiver
TUBES (FOUR)	Types, 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output.
POWER SUPPLY	1½ Volt "A" Supply & 90 Volt "B" Supply in Pack Form
RATING	240 MA @ 1.5 Volts DC & 15 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to grid cap. of 1A7GT. Low side to chassis.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Repeat adjustments for greater accuracy.
2	Direct	High side to antenna lead. Low side to chassis.	1400KC	1400KC	"	A5,A6	Adjust for maximum output in order given.
3	Direct	"	600KC	Tune for maximum output.	"	A7	Rock tuning capacitor and adjust for maximum output. Repeat Steps 2 and 3 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

WATTERSON MODEL 4782
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WATTERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WATTERSON PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	10	25	19W11	BR102A	TC22	M-10-25	TA-10	PRS25-10	Bias Filter
6	.002	600	5W18	DT6D2	TP405	S-6-002	TC-22	684-002	Output Plate Bypass
7	.01	400	5W6	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
8	.005	600	5W2	DT6D5	TP408	S-6-005	TC-25	684-005	" "
9	.25	400	5W14	DT4P25	TP430	S-4-25	TC-2	484-.25	RF Bypass Pwr. Supp.
10	.02	400	5W7	DT4S2	TP423	S-4-02	TC-12	484-02	IF Grid Filter
11	.1	400	5W13	DT4P1	TP428	S-4-1	TC-1	484-.1	Converter Screen Bypass
12	.1	400	5W13	DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
13	100	500	6W1	5W5T1	MC235	M0.5-31	1FM-31	1468-0001	AF Plate Bypass
14	250	500	6W2	5W5T25	MC240	M0.5-325	1FM-325	1468-00025	Diode Filter
15	500	500	6W3	5W5T5	MC245	M0.5-35	1FM-35	1468-0005	Osc. Grid Cap.
16	50	500	6W4	5W5Q5	MC225	M0.5-45	1FM-45	1468-00005	Ext. Ant. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WATTERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1	13W2	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch		" "	M-27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WATTERSON PART No.	IRC PART No.	IDENTIFICATION CODES
18	220KΩ	½	9W47	BTS-220K	Red-Red-Yl. Oscillator Grid
19	22KΩ	½	9W6	BTS-22K	Red-Red-Or. Converter Screen Dropping
20	1 Meg.	½	9W55	BTS-1 Meg.	Br.-Blk.-Grn. IF Grid
21	1 Meg.	¼	9W55	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
22	1 Meg.	¼	9W55	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
23	10 Meg.	¼	9W63	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
24	2.2 Meg.	½	9W56	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
25	360Ω	½	9W32	BW-½-330	Or.-Blue-Br. Bias Network
26	.75Ω	¼	9W12	BW-½-.68	Vi.-Grn.-Silver Battery Saver

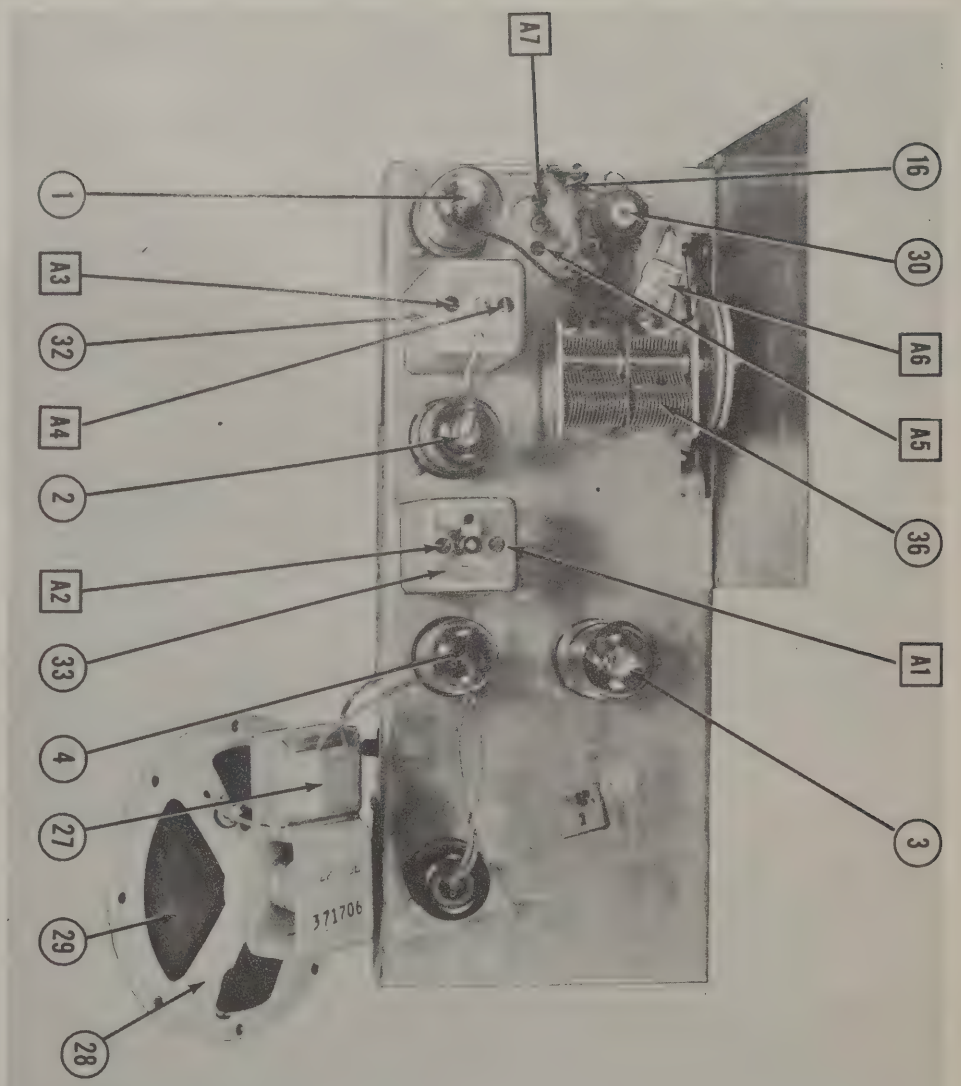
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: WATTERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
27	8000Ω	3.5Ω	430Ω	.6Ω	12W2	A-3078	T22S47	A-2931	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: WATTERSON PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
28	PM	3.5Ω	22W10B	ST-105 Mod. P5-X		
	CONE DIA.	VC DIA.				
29	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

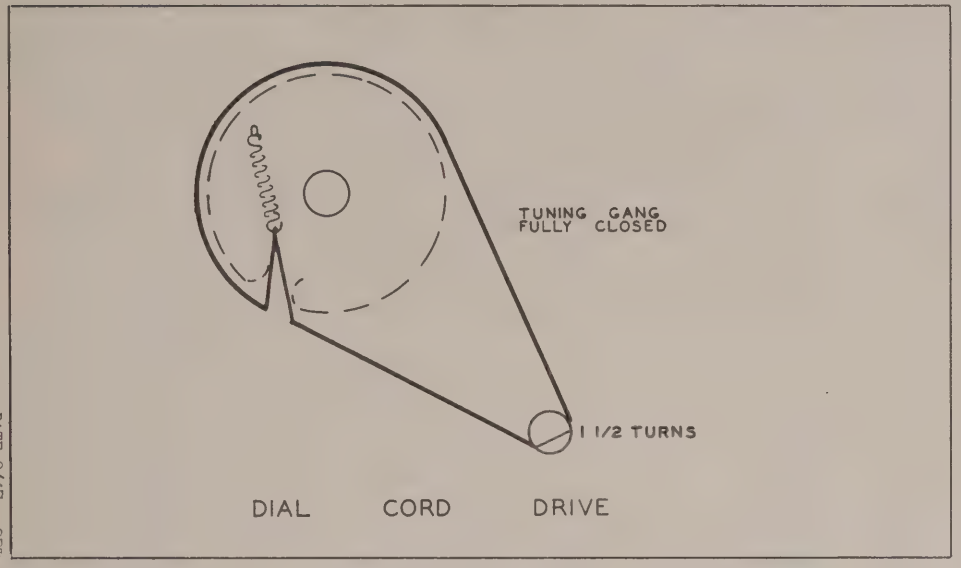
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA WATTERSON PART No.	REPLACEMENT DATA MEISSNER PART No.
30	Ant. Coil	43Ω	2.8Ω	3W-46	
31	Osc. Coil	2.3Ω	4.4Ω	3W-45	
32	Input IF	11.5Ω	24Ω	3W-24	16-6658
33	Output IF	17Ω	13Ω	3W-25	16-6660

BATTERIES

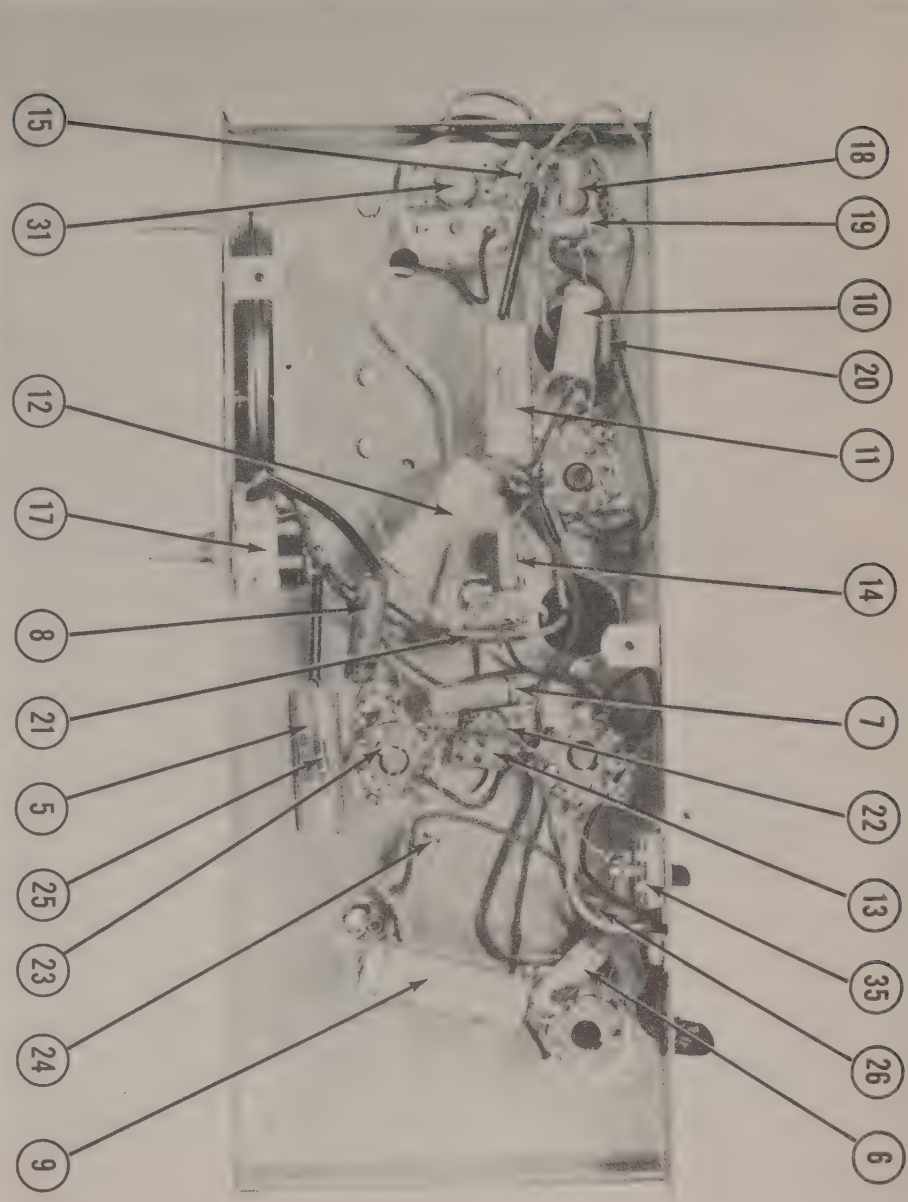
ITEM No.	VOLTAGE	WATTERSON PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
34	1½V "A" 90V "B"				#758	

MISCELLANEOUS

ITEM No.	PART NAME	WATTERSON PART No.	NOTES
35	Switch		Economizer
36	2 Gang Var. Cap		15-489 MMF (each section)

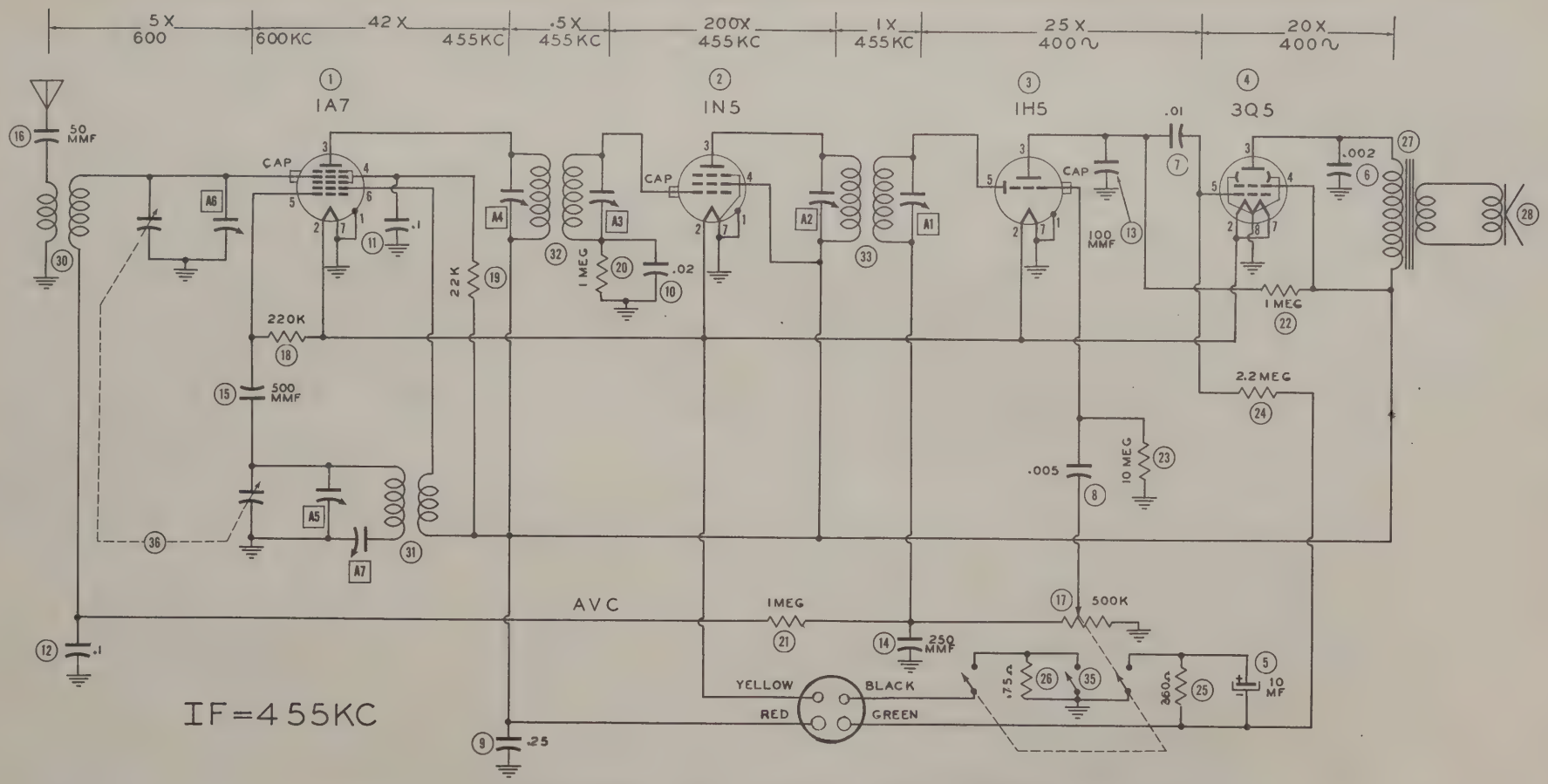


CHASSIS—BOTTOM VIEW



WATTERSON MODEL 4782
BATTERY OPERATED

WATTERSON MODEL 4782
BATTERY OPERATED



VOLTAGE AND RESISTANCE READINGS TAKEN WITH BATTERY SWITCH IN NEW POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	1.5VDC	85VDC	87VDC	-17VDC§	85VDC	0V.	85VDC	0V.
2	1N5GT	0V.	1.5VDC	85VDC	85VDC	0V.	0V.	0V.	0V.	0V.
3	1H5GT	0V.	1.5VDC	43VDC	-2.5VDC	-.1VDC	0V.	0V.	0V.	0V.
4	3Q5GT	0V.	1.5VDC	85VDC	85VDC	-2.5VDC	-.3VDC	1.5VDC	0V.	——

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0Ω	*	INF.	INF.	220KΩ	INF.	0Ω	INF.	1.6 Meg.
2	1N5GT	0Ω	*	INF.	INF.	INF.	1 Meg.	0Ω	INF.	1 Meg.
3	1H5GT	0Ω	*	INF.	2.2 Meg.	450KΩ	0Ω	0Ω	10 Meg.	10 Meg.
4	3Q5GT	0Ω	*	INF.	INF.	2.2 Meg.	.8Ω	*	0Ω	——

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

DUE TO ABSENCE OF ELECTROLYTIC IN B+ CIRCUIT ALL B+ READINGS WILL MEASURE INFINITE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4714-31

The stage gain measured values listed above are approximate values for an average operative stage rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment etc., that an absolute reading is impractical. AVC is shorted to chassis during stage gain measurements.

1. DC Voltage measurements are at 20,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

WOOLAROC
MODEL 3-6A/5

WOOLAROC
MODEL 3-6A/5

WOOLAROC MODEL 3-6A/5

TRADE NAME	Woolaroc Model 3-6A/5
SUPPLIER	Phillips Petroleum Co., Bartlesville, Okla.
TYPE SET	AC-DC Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1700KC RATING .240 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1700KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1550KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 9/47 SET 23 FOLDER 4714-32

PARTS LIST AND DESCRIPTIONS

WOOLAROC MODEL 3-6A/5

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		WOOLAROC PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	WOOLAROC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	80	150		EZ5515C		DSB-804020-150		PRSA150/80-40	Filter
B	40	150							"
C	20	25						PRS25/25	Cathode Bypass
7	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Output Plate Bypass
8	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	Audio Coupling
9	.005	400		DT6D5	TP408	S-6-005	TC-25	484-005	" "
10	.25	200		DT4P25	TP430	S-4-25	TC-2	484-.25	AVC Filter
11	.003	600		DT6D3	TP406	S-6-003	TC-23	684-003	Ant. Coupling
12	.1	600		DT6P1	TP418	MPW-6-1	TC-1	684-.1	Line Bypass
13	220	500		5W5T2	MC237	MO.5-32	1FM-32	1468-0002	AF Plate Bypass
14	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Cap.
15	10	500		5W5Q1	MC215	MO.5-41	MS-41	1468-00001	Fixed Trimmer

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	WOOLAROC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
16A	500KΩ	1		MK401	D13-133	AM-60-Z	Volume Control
B	Shaft			Not Req.	E	KSS-3	Attach to 16A per instructions
C	Switch			M26	41	SW-A	" " " " "

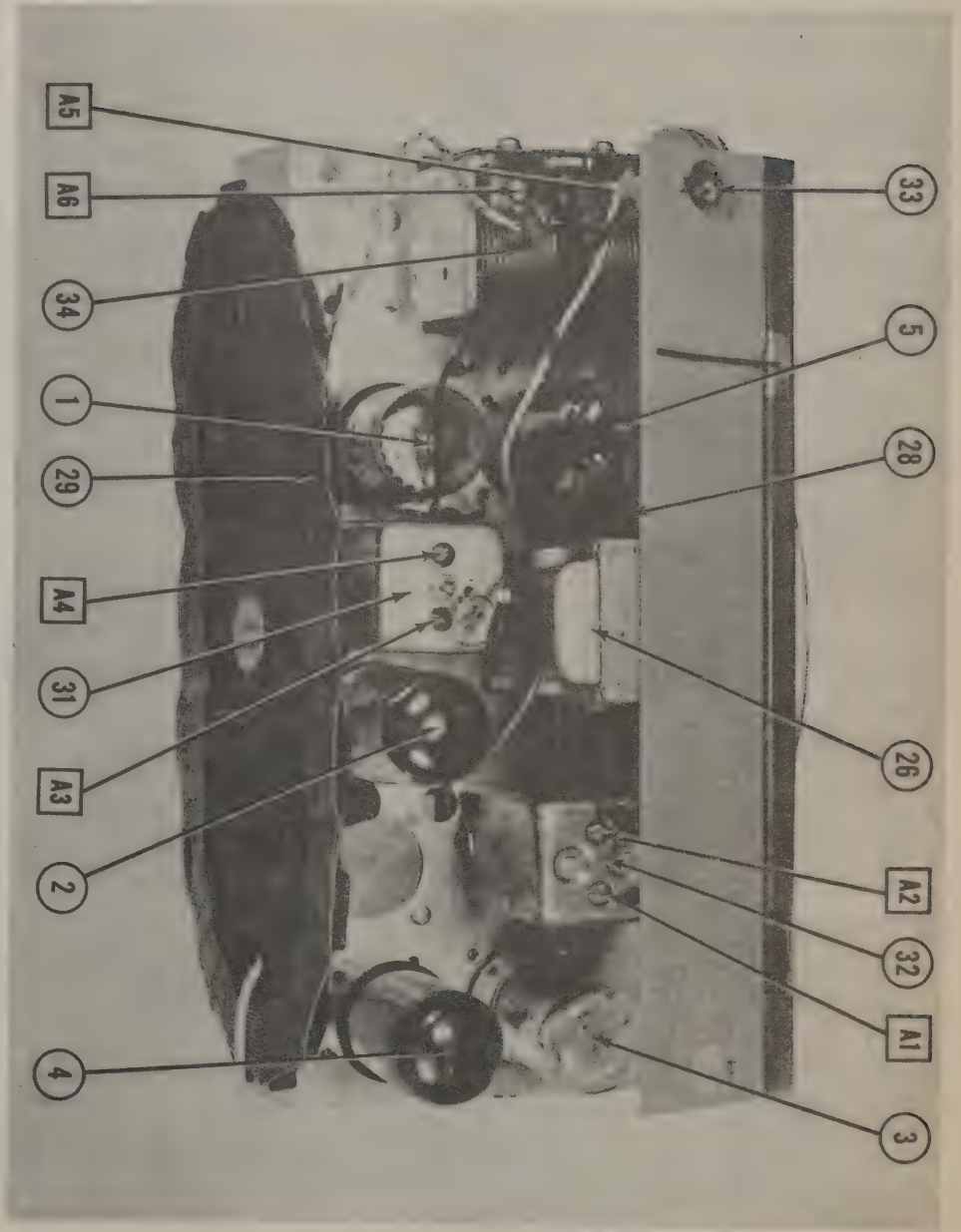
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	WOOLAROC PART No.	IRC PART No.	
17	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
18	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
19	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AF Grid
20	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
22	33Ω	1		BW-1-33	Or.-Or.-Blk. Output Cathode
23	120Ω	1		BW-1-120	Br.-Red-Br. Output Cathode
24	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
25	100Ω	1		BW-1-100	Br.-Blk.-Br. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WOOLAROC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
26	2050Ω	3.3Ω	210Ω	.8Ω		A-3876*	T22S45*	A-2928*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WOOLAROC PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105		
27	PM	3.3Ω		Mod. P5-X		
	CONE DIA.	VC DIA.				
28	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

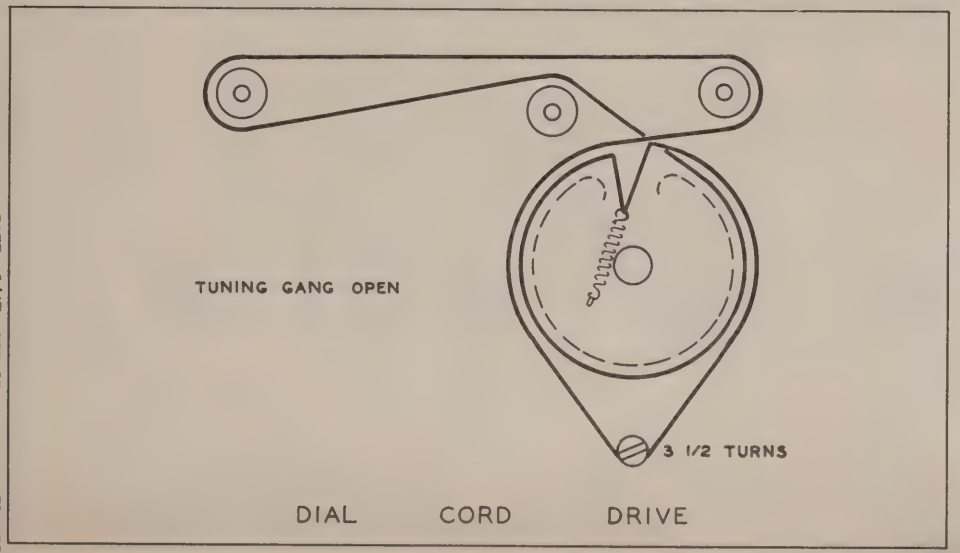
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	WOOLAROC PART No.	MEISSNER PART No.	
29	Loop Ant.	0Ω	.7Ω	LL-11		
30	Osc. Coil		5Ω	A-L02	14-1040	
31	Input IF	15.5Ω	15.5Ω	TM2-1	16-6658	
32	Output IF	16Ω		TM2-3	16-6670	

DIAL LIGHT

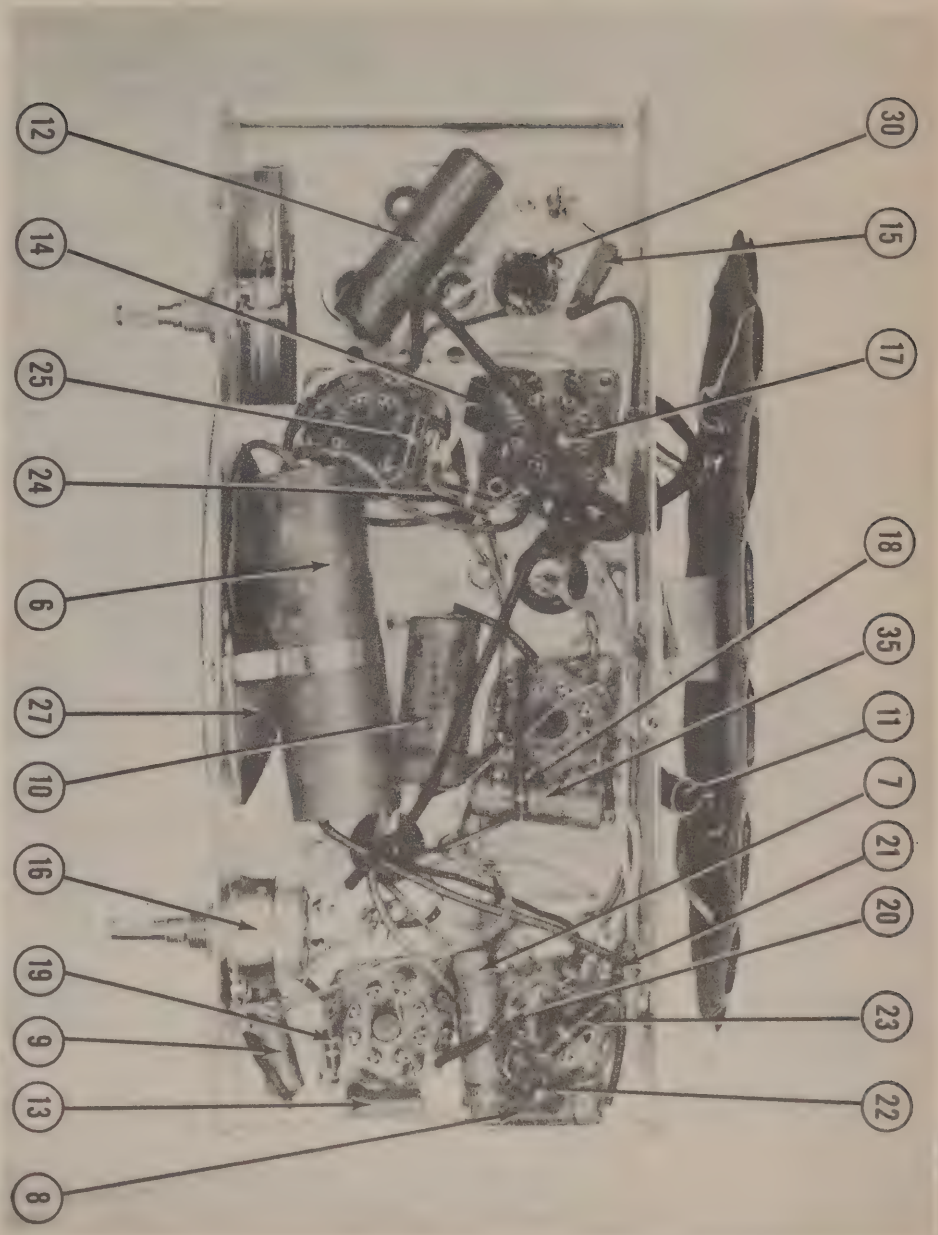
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					WOOLAROC PART No.		
33	Bayonet	7.5	0.2	White			Type 51

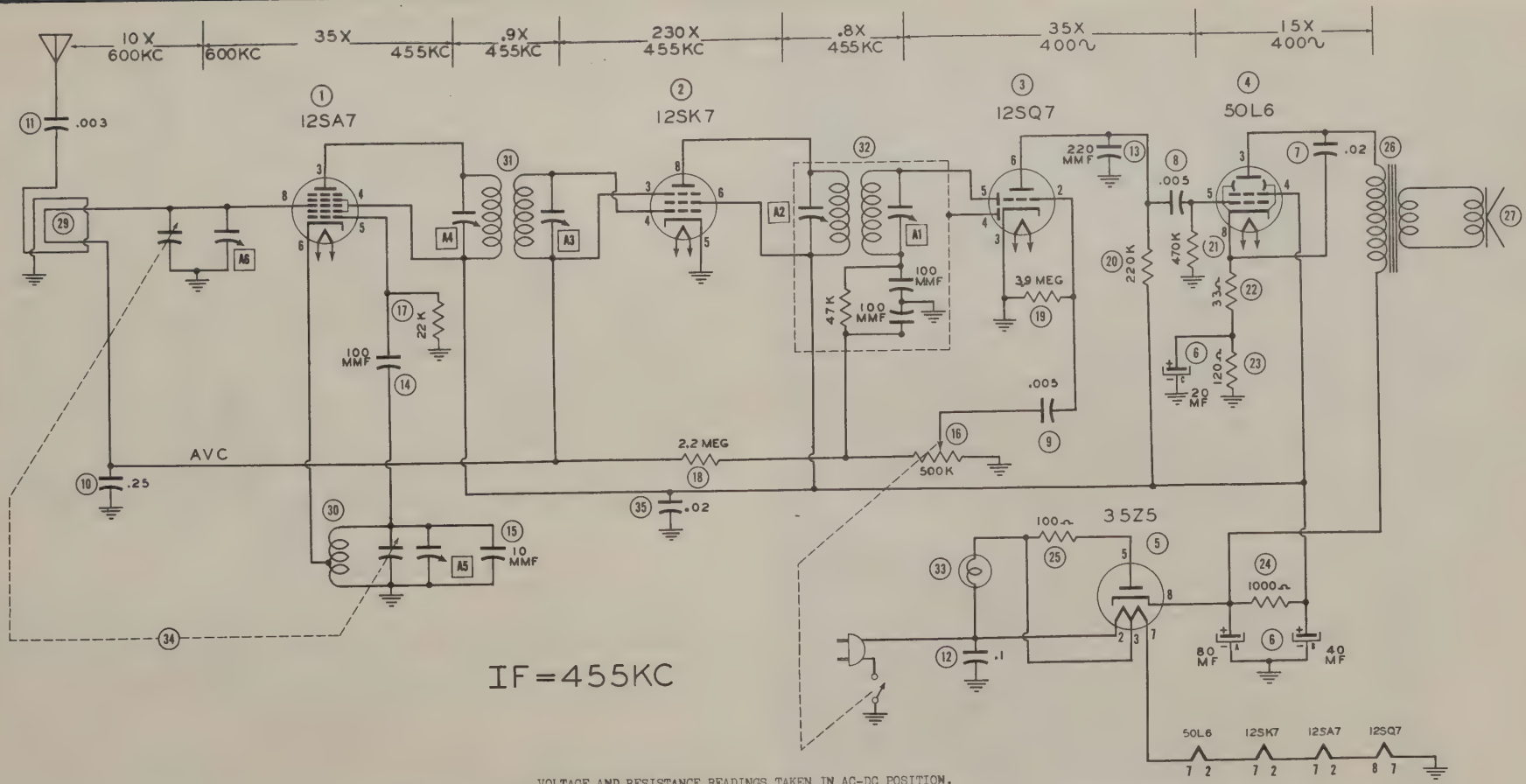
MISCELLANEOUS

ITEM No.	PART NAME	WOOLAROC PART No.	NOTES
34	Tuning Capacitor	CV-6	(23-440 MMF, 20-186 MMF)



CHASSIS—BOTTOM VIEW





VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	12VAC	77VDC	77VDC	-5VDC§	0V.	25VAC	-.4VDC
2	12SK7GT	0V.	25VAC	-.4VDC	-4VDC	0V.	77VDC	37VAC	77VDC
3	12SQ7GT	0V.	-.7VDC	0V.	0V.	-.2VDC	60VDC	0V.	12VAC
4	50L6GT	4.1VDC	37VAC	90VDC	77VDC	0V.	0V.	84VAC	5.3VDC
5	35Z5GT	0V.	117VAC	113VAC	105VDC	107VAC	0V.	84VAC	105VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	12Ω	30KΩ	30KΩ	23KΩ	.5Ω	20Ω	3 Meg.
2	12SK7GT	0Ω	25Ω	3 Meg.	3 Meg.	0Ω	30KΩ	36Ω	30KΩ
3	12SQ7GT	0Ω	4 Meg.	0Ω	0Ω	600KΩ	250KΩ	0Ω	12Ω
4	50L6GT	112Ω	36Ω	30KΩ	30KΩ	450KΩ	INF.	85Ω	140Ω
5	35Z5GT	INF.	112Ω	110Ω	30KΩ	200Ω	INF.	85Ω	30KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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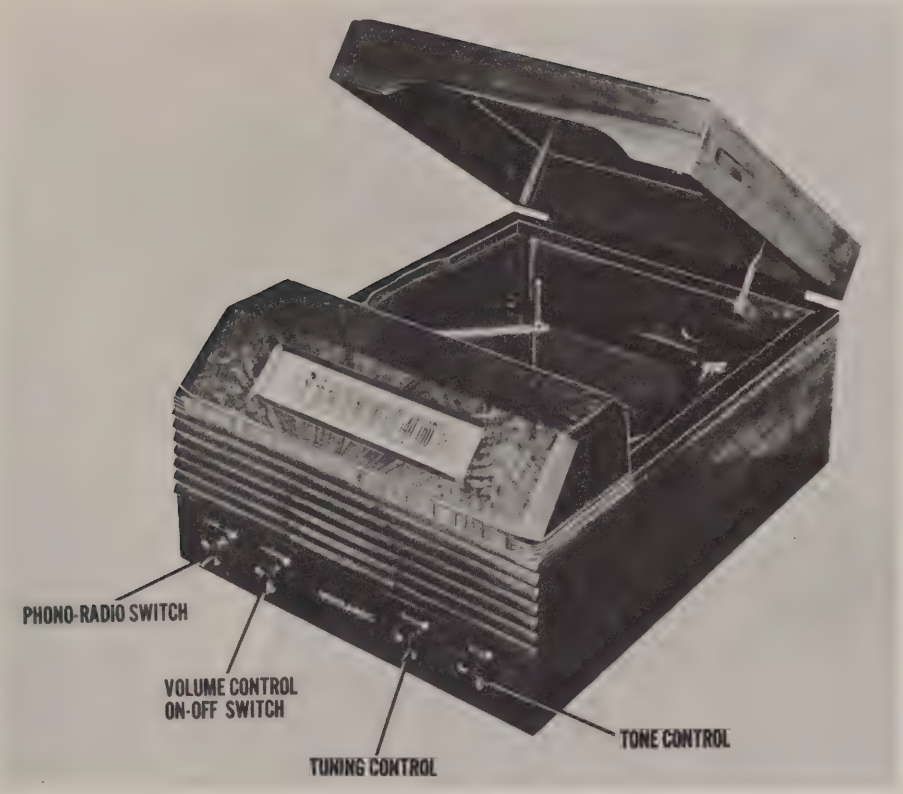
4714-32

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**



WOOLAROC
MODEL 3-20A

WOOLAROC
MODEL 3-20A

WOOLAROC MODEL 3-20A

TRADE NAME	Woolaroc, Model 3-20A
MANUFACTURER	Phillips Petroleum Co., Bartlesville, Okla.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 12SA7GT, Converter, 12SK7GT IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1620KC RATING .250 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to rear stator of tuning capacitor Low side to chassis.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1700KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		WOOLAROC PART No.	STANDARD REPLACEMENT		
1	Converter		12SA7GT	8AD	
2	IF Amp.		12SK7GT	8N	
3	Det.-AVC-AF		12SQ7	8Q	
4	Power Output		50L6GT	7AC	
5	Rectifier		35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	WOOLAROC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
6A	30	150		BRD34215	FP357*	DY-804020-150	EL-340*		■ Filter
B	40	150							▲ "
C	20	150			TC45		UT-201		Cathode Bypass
7	.1	600		DT6P1	TP418	MPW-6-1	TC-1	684-.1	Line Filter
8	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Output Plate Bypass
9	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	Audio Cpupling
10	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	Tone Comp.
11	.003	600		DT6D3	TP406	S-6-003	TC-23	684-003	" "
12	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	Audio Coupling
13	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	IF Cathode Bypass
14	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	AVC Filter
15	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	RF Bypass Pwr. Supply
16	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Phono Isolation
17	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	Ext. Ant. Coupling
18	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AF Plate Bypass
19	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid
20	10	500		5W5Q1	MC215	MO.5-41	MS-41	1468-00001	Fixer Trimmer

*Parallel two sections to obtain desired capacity.

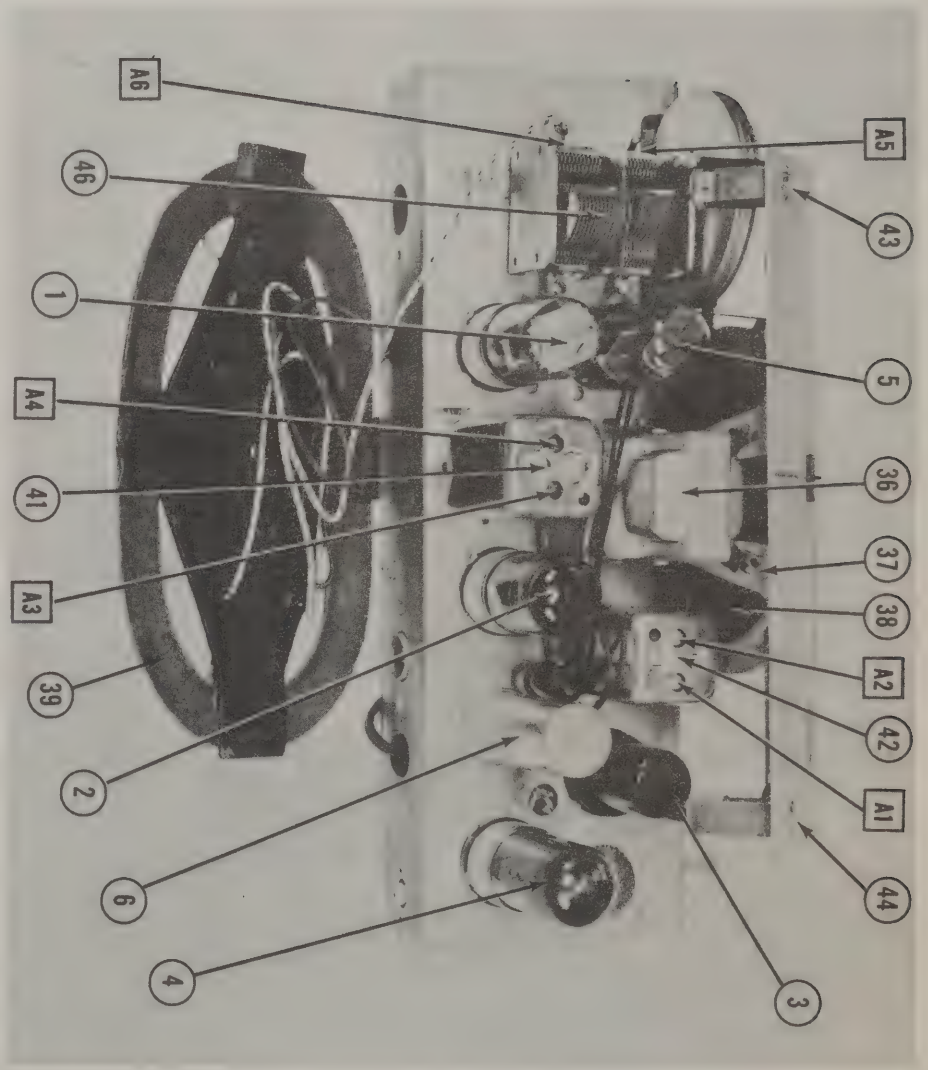
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	WOOLAROC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
21A	500KΩ	1	RPS-2A	TM-230	D13-133X	AT-78	Volume Control
B	Shaft		Not Req.	SS-25	E	KSS-3	Attach to 21A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
22A	500KΩ	1	RP6-504B	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	WOOLAROC PART No.	IRC PART No.	
23	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
24	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Phono Shunt
25	820KΩ	½		BTS-820K	Gray-Red-Yl. Series Phono
26	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
27	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AF Grid
28	33KΩ	½		BTS-33K	Or.-Or.-Or. Tone Compensation
29	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Load
30	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
31	33Ω	1		BW-1-33	Or.-Or.-Blk. Output Cathode
32	120Ω	1		BW-1-100	Br.-Blk.-Br. Output Cathode
33	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
34	100Ω	½		BW-½-100	Br.-Blk.-Br. Surge Limiter
35	150Ω	½		BW-½-150	Br.-Grn.-Br. Pilot Light Shunt

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WOOLAROC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
36	2100Ω	3.3Ω	100Ω	.75Ω		A-3870†	T2S48†	A-2928†	†Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WOOLAROC PART No.	JENSEN PART No.		
37	FIELD PM	VC IMP. 3.5Ω		ST-107 Mod. P5-V		
38	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

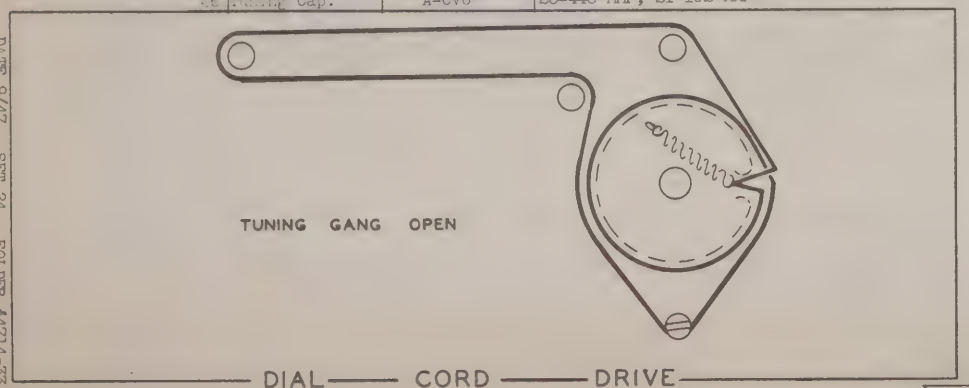
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	WOOLAROC PART No.	MEISSNER PART No.	
39	Loop Ant.	.2Ω	1.5Ω	LL-7		
40	Osc. Coil		3.5Ω	LO-2	14-1046	
41	Input IF	15.5Ω	15.5Ω	TM2-1	16-6658	
42	Output IF	14.5Ω		TM2-3	16-6670	

DIAL LIGHT

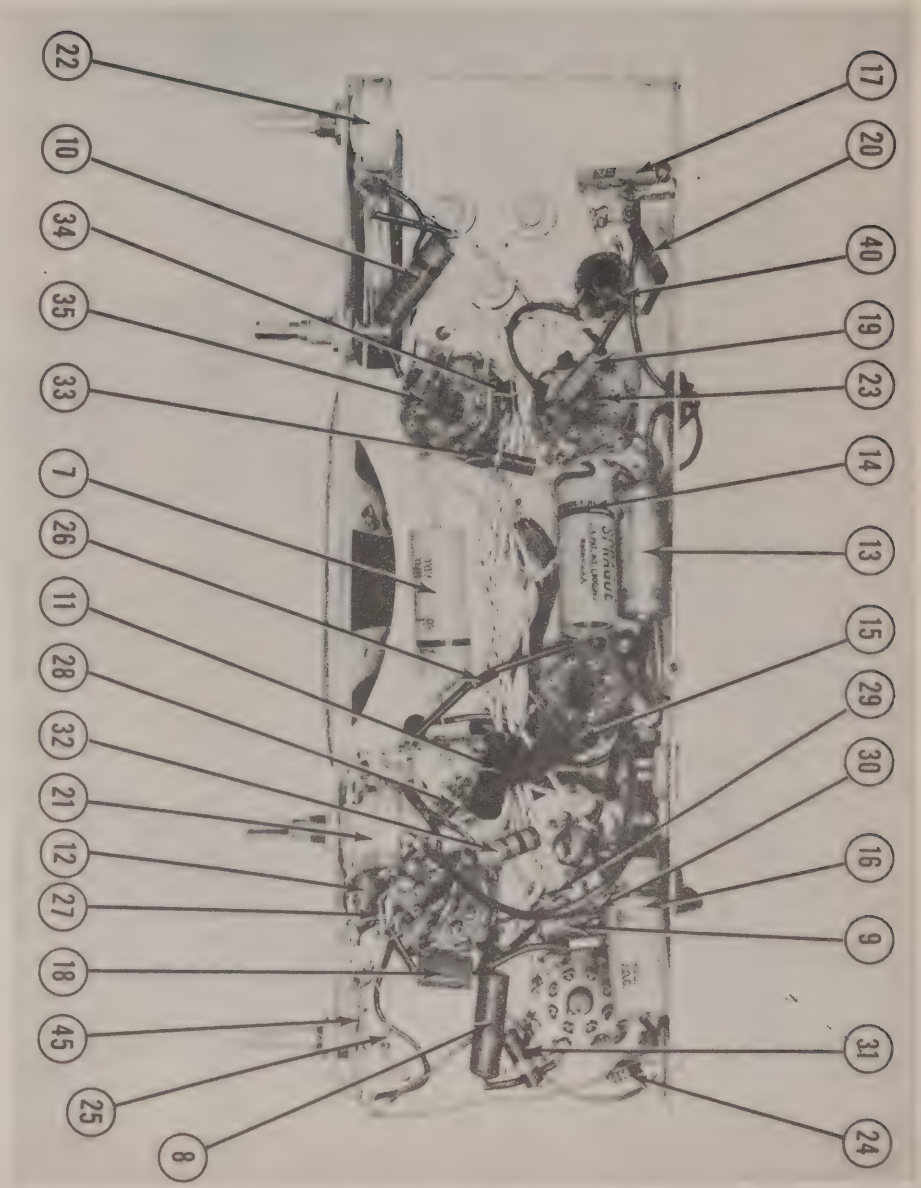
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					WOOLAROC PART No.		
43	Bayonet	2.6	0.17	White			Type 1490
44	"	"	" "	"			" "

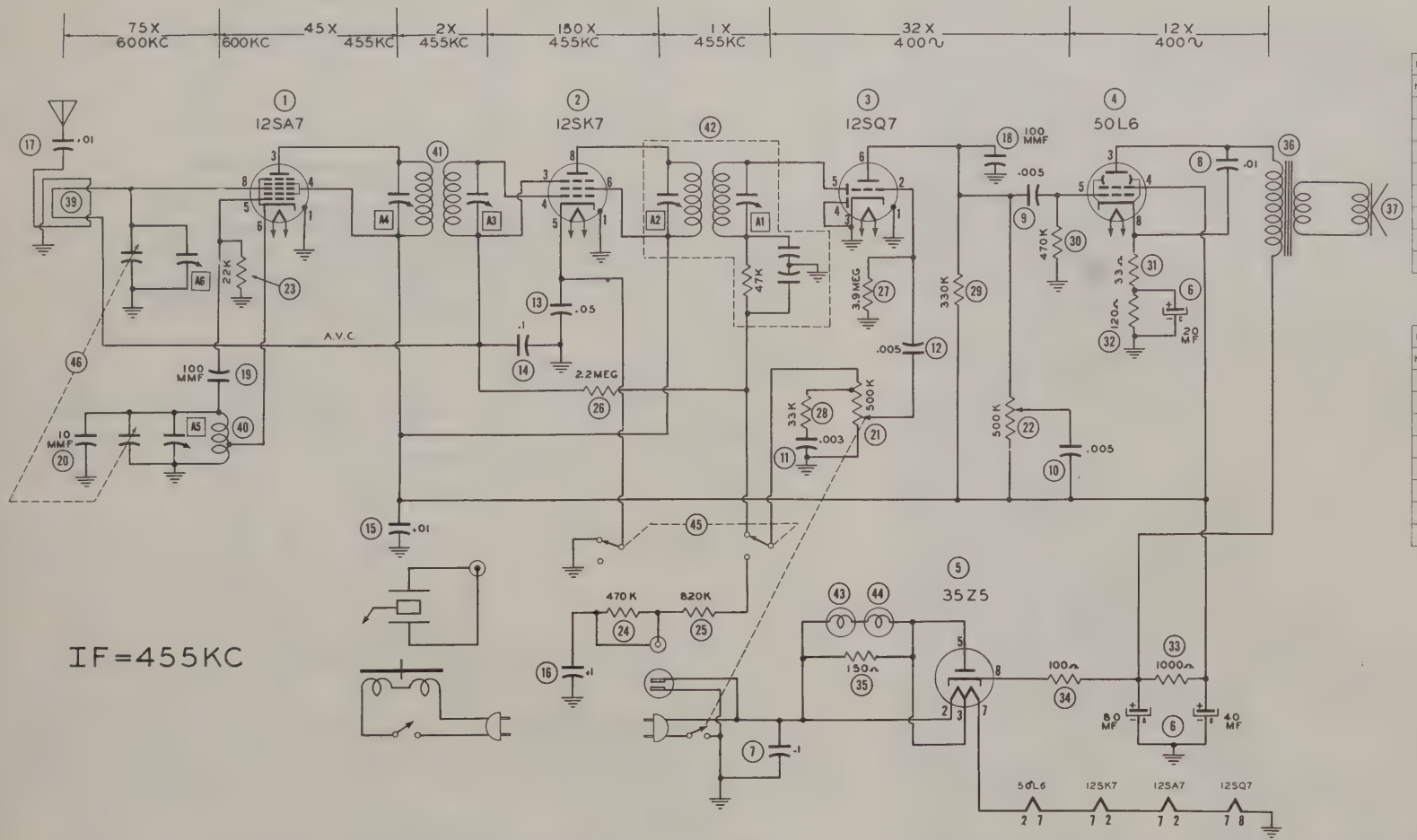
MISCELLANEOUS

ITEM No.	PART NAME	WOOLAROC PART No.	NOTES
45	Switch		Radio-Phono
46	Tuning Cap.	A-CV6	25-448 MMF, 21-192 MMF



CHASSIS—BOTTOM VIEW





Pin No.	12SA7GT Volt.	12SA7GT Res.	12SK7GT Volt.	12SK7GT Res.
1	0V.	0Ω	0V.	0Ω
2	13VAC	1Ω	.6VAC	1Ω
3	77VDC	50KΩ	-.8VDC	3 Meg.
4	77VDC	50KΩ	-.8VDC	3 Meg.
5	-5.6VDC	21KΩ	0V.	0Ω
6	0V.	0Ω	77VDC	50KΩ
7	26VAC	25Ω	40VAC	36Ω
8	-.5VDC	3 Meg.	77VDC	50KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin No.	12SQ7GT Volt.	12SQ7GT Res.	50L6GT Volt.	50L6GT Res.
1	0V.	0Ω	3.5VDC	135Ω
2	-.65VDC	4 Meg.	26VAC	0Ω
3	0V.	0Ω	92VDC	50KΩ
4	0V.	0Ω	77VDC	50KΩ
5	-.38VDC	50KΩ	0V.	500KΩ
6	.7VDC	5.5MΩ	0V.	1MΩ
7	12VAC	1Ω	26VAC	36Ω
8	0V.	0Ω	8VDC	100Ω

Pin No.	35Z5GT Volt.	35Z5GT Res.
1	105VDC	50KΩ
2	117VAC	110Ω
3	115VAC	108Ω
4	77VDC	50KΩ
5	115VAC	10Ω
6	105VDC	50KΩ
7	98VAC	80Ω
8	105VDC	50KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4714-33

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TOP VIEW

SEEBURG
MODEL L

GENERAL INFORMATION

This is a two-post changer designed to play and automatically change up to fourteen 10-inch or ten 12-inch records. It will shut off automatically at the end of the last record. Do not intermix 10 and 12-inch records.

Manufactured by J. P. SEEBURG CORPORATION, 1500-24 Dayton Street, Chicago 22, Illinois

THE FOLLOWING MANUFACTURERS HAVE USED THIS RECORD CHANGER IN POSTWAR PRODUCTION:

Crosley Corporation	1329 Arlington Street, Cincinnati, Ohio
Espey Manufacturing Company	528 East 72nd Street, New York, New York
Garod Radio Corporation	70 Washington Street, Brooklyn, New York
The Hallicrafters Company	Fifth & Kostner Streets, Chicago, Illinois
Magnavox Company	2131 Bueter Road, Ft. Wayne, Indiana
Mello-Tune Mfg. Company	5583 East 8 Mill Road, Van Dyke, Michigan
Motorola Incorporated	4545 Augusta Boulevard, Chicago, Illinois
Noblitt-Sparks Industries	Columbus, Indiana
R C A Victor Division	Camden, New Jersey
Rogers-Majestic, Ltd.	622-40 Fleet Street, West, Toronto, Ont., Canada
Sparks-Withington Co.	Jackson, Michigan
Stromberg-Carlson Company	100 Carlson Road, Rochester, New York
Warwick Manufacturing Co.	4640 West Harrison Street, Chicago, Illinois
Wells-Gardner & Company	2701 N. Kildare Avenue, Chicago, Illinois

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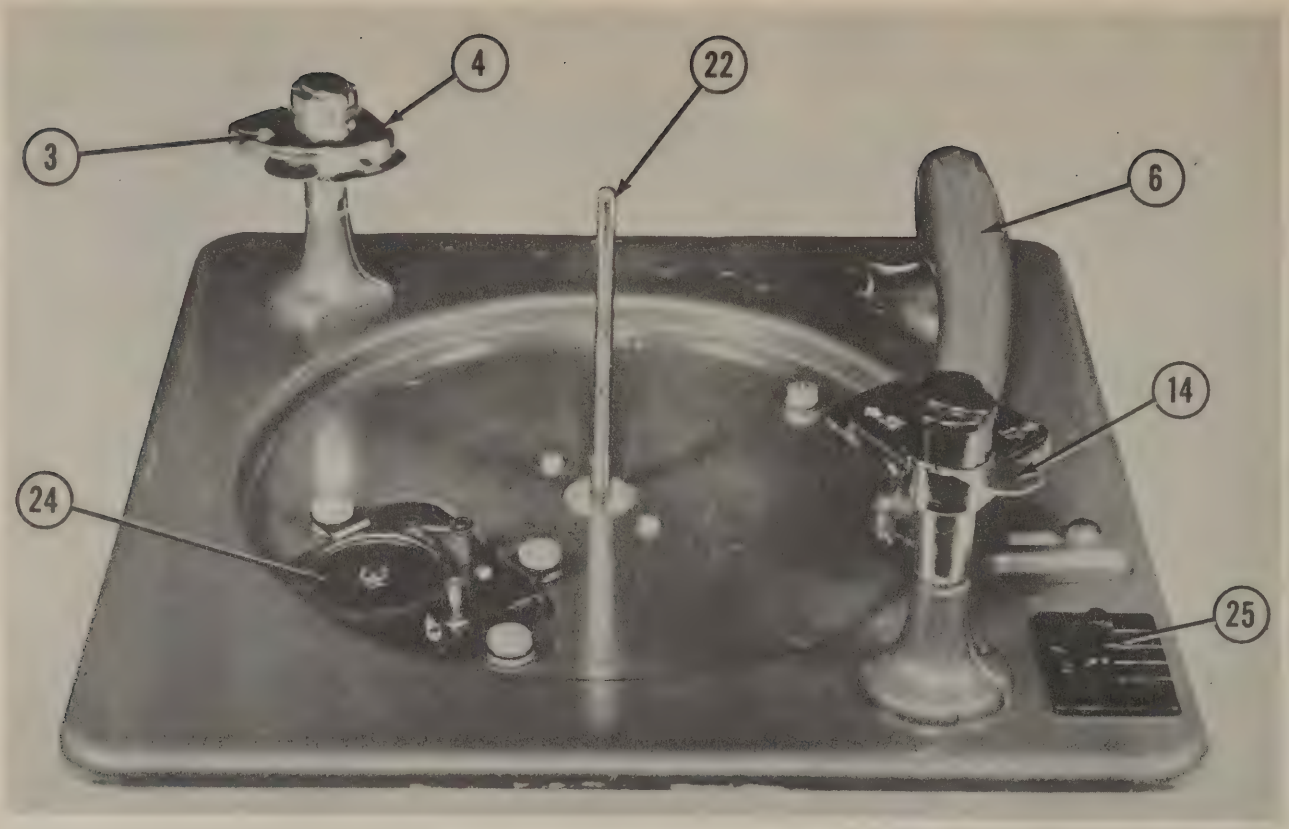
SEEBURG
MODEL L



TOP VIEW LESS TURNTABLE

MANUAL OPERATION

Odd-sized, or very old records, and home recordings should be played in "manual" position:

1. Lift the selector knob and turn it as for unloading.
2. Place record on the turntable.
3. Move control knob to "manual" position.
4. Place pickup arm on the record.
5. When the record has finished playing, the pickup arm may be returned to its rest position by hand.

Placing the control knob in "manual" position moves the control slide (30), which, in turn, pulls the manual reject slide (45) into position near the clutch engagement lever (69). This prevents the clutch lever (69) from falling to start the change cycle.

AUTOMATIC OPERATION

1. Turn the selector knobs for the correct size records.
2. Place up to fourteen 10-inch or ten 12-inch records on the selector arms. Do not intermix 10-inch and 12-inch records.
3. Move the control knob to "reject" and then release it. The button will return to "auto" position. The changer will now play the entire stack of records and upon completion of the last record will shut off automatically.
4. To reject any record, move the control button to "reject" and release it.
5. To shut off the changer, move the control knob to "off." Lift the pickup arm off the record and move it outwardly until the pickup arm lever (48) is latched with the pickup arm inner latch (78).
6. To unload records, lift the selector arms and turn them so they will clear the records.

THE CHANGE CYCLE

As the control slide (30) moves from "off," past "automatic," the switch (36) is turned on starting the motor and turntable. As the control slide reaches "reject," the changer is tripped as follows: The control slide (30) pushes the connecting link (30A), which, in turn, moves the reject slide (45) (surface "A") against the stud of the trip lever (65) causing the trip lever to move and allow the clutch engagement lever (69) to fall.

The lug on the rotating pinion gear (74) strikes the clutch engagement lever (69) causing the drive gear (66) to rotate and mesh with the pinion gear.

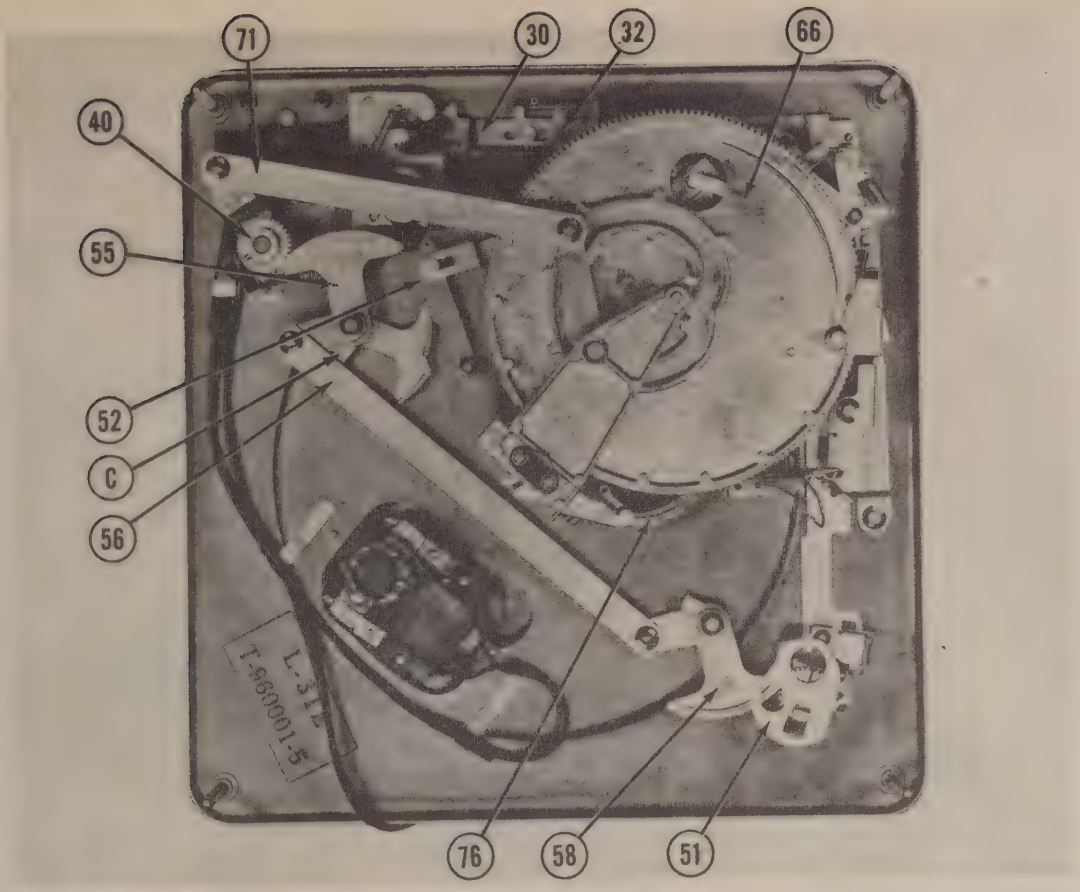
The lift pin (11) rides up the inclined portion of the main cam, raising the pickup arm from the record.

The bottom surface of the main cam (66) actuates the drive link (70), causing the selector arms to rotate a quarter of a turn to release a record. The motion of the drive link (70) is transmitted to the selector arms by means of the connecting rod (71), drive crank (39), selector shaft (21A), post gear (40), segment (55), segment tie plate (56), segment (58), post gear (50), and selector shaft (27). These operate as one unit in dropping a record.

The clutch engagement lever (69) is reset with the trip lever (65) by means of the pickup arm lever assembly (48), which is locked in position by the pickup arm inner latch (78). For the position of the pickup arm latches see the "Bottom View Less Main Cam."

The pickup arm lever (48) is released as the surface (66A) of the main cam passes the pickup arm outer latch (79). The spring pressure from the pickup arm locator (46) moves the pickup arm lever (48) and the pickup arm (6) in toward the record. The locator (46) contacts the reset lever assembly (52) setting the 10-inch or 12-inch set-down point of the tone arm.

The retard lever (63) pushes against the stud of the pickup arm lever (48), thus holding the pickup arm in position while the lift pin (11) rides down the inclined



BOTTOM VIEW

portion of the drive gear and lowers the pickup arm to the record. The retard lever now moves away from the pickup arm lever (48) allowing the pickup arm to move freely across the record.

The drive gear (66) is locked in open tooth position by the drive gear stop lever (76) in the detent in cam (66A) at the end of the change cycle.

AUTOMATIC TRIP

At the end of a record, a new change cycle is set in motion by either of two actions releasing the clutch engagement lever (69):

1. Minimum diameter cutoff occurs when the trip shoe (48A) attached to the pickup arm lever (48) strikes the trip lever (65).

2. Eccentric groove cutoff occurs when the pickup arm is moved away from the spindle. The sawtooth edge of the trip plate attached to the pickup arm lever engages and moves the trip dog on the trip lever (65). Either of these actions allows the clutch engagement lever to fall, starting a new cycle.

MANUAL OPERATION

When the control button is moved to "manual," four conditions are set up:

1. The motor switch is turned on.

2. The end of the control slide (30), acting through the connecting link (30A) and the manual reject slide (45), partially disengages the pickup arm latch lever (77) from its locked position. It now serves as a detent for the pickup arm while in the rest position. This prevents movement due to accidental lumping.

3. The manual lockout (32) on the control slide (30) prevents the pickup arm locator (46) from moving inward. This allows the pickup arm to have free movement.

4. The manual reject slide (45) is pulled back so the clutch engagement lever (69) is prevented from engaging the pinion gear.

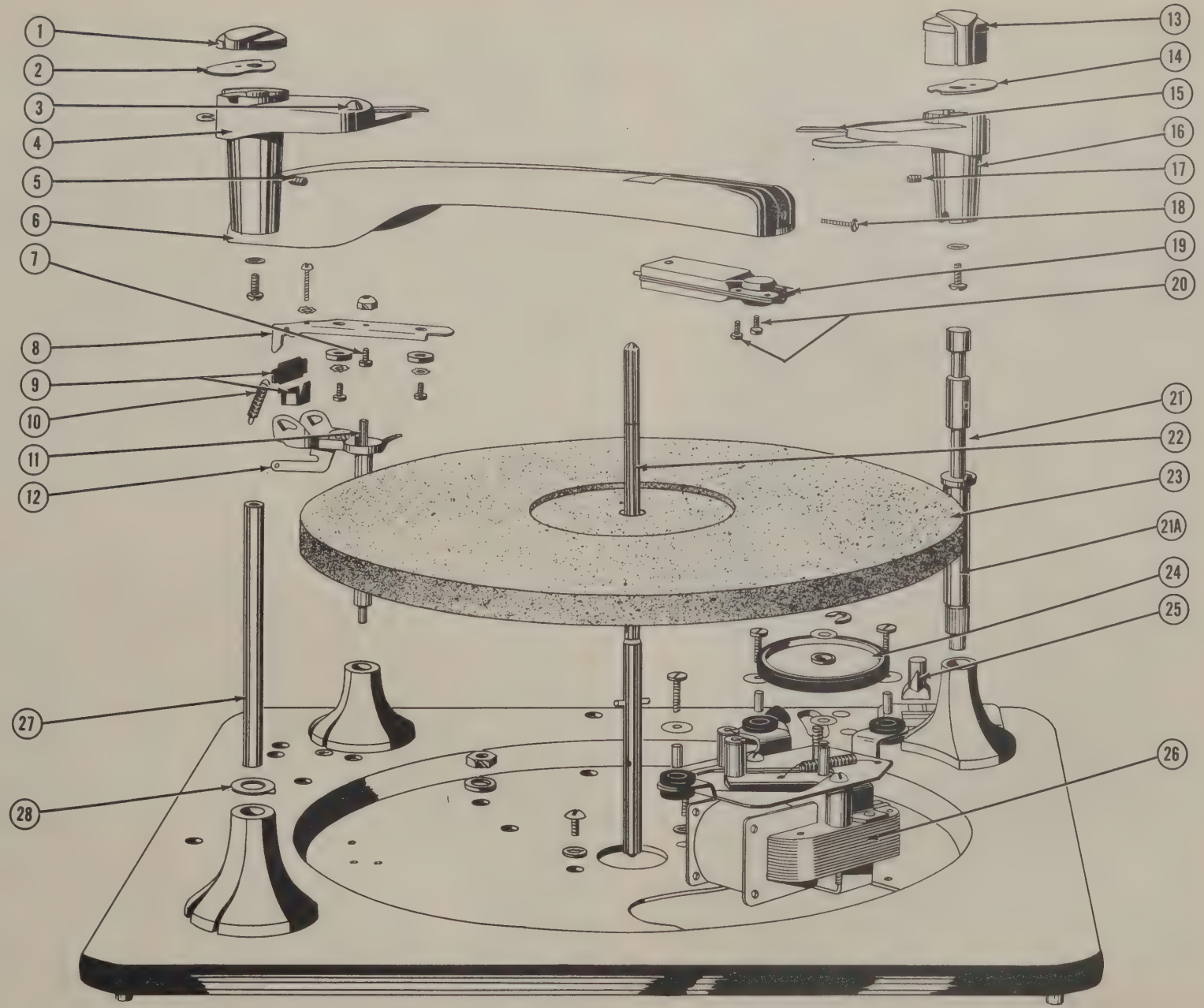
AUTOMATIC SHUTOFF

The release of weight of the record from the selector bracket button (3) allows the shutoff cam (51) to drop down and engage the stud of the shutoff slide bracket (60). After the last record has finished playing, the main gear is put in motion by the automatic tripping. The stud on the bottom of the gear moves away from the shutoff bracket (61) allowing the bracket to move in toward the gear by the tension of the shutoff bracket spring (62).

Through the action of the main cam (66), the tone arm is raised from the record and is moved outward. At the same time, the No. 2 post gear (50) rotates the shutoff cam (51) against the rivet of the shutoff slide bracket (60). The tension of the shutoff slide spring (59) moves the shutoff slide (49) against the shutoff trip (43B) allowing the shutoff dog (43A) to align with the shutoff bracket (61). The end of the shutoff slide moves behind the pickup arm center latch (77). This prevents the pickup arm lever (48) from being unlatched when the pickup arm outer latch (79) comes in contact with the cam (66A).

The tone arm is now in its rest position and locked there by the tone arm inner latch (78). After the cam (66A) has passed the outer latch (79), the shutoff cam (51) is reversed in direction, returning the shutoff slide to its normal position. At the end of the drive-gear cycle, the stud on the bottom of the gear comes in contact with the shutoff bracket (61) moving the shutoff bracket against the shutoff dog. This causes the shutoff lever (49) to pivot against the control slide (30) moving it into the "off" position and turning off the switch (36).

As the main gear completes its cycle, the stud on the bottom of the gear moves past the widest portion of the shutoff bracket, permitting the shutoff bracket (61) and the shutoff lever to return to their rest positions. This allows the shutoff dog (43A) to be caught by the shutoff trip (43B) and reset in its rest position.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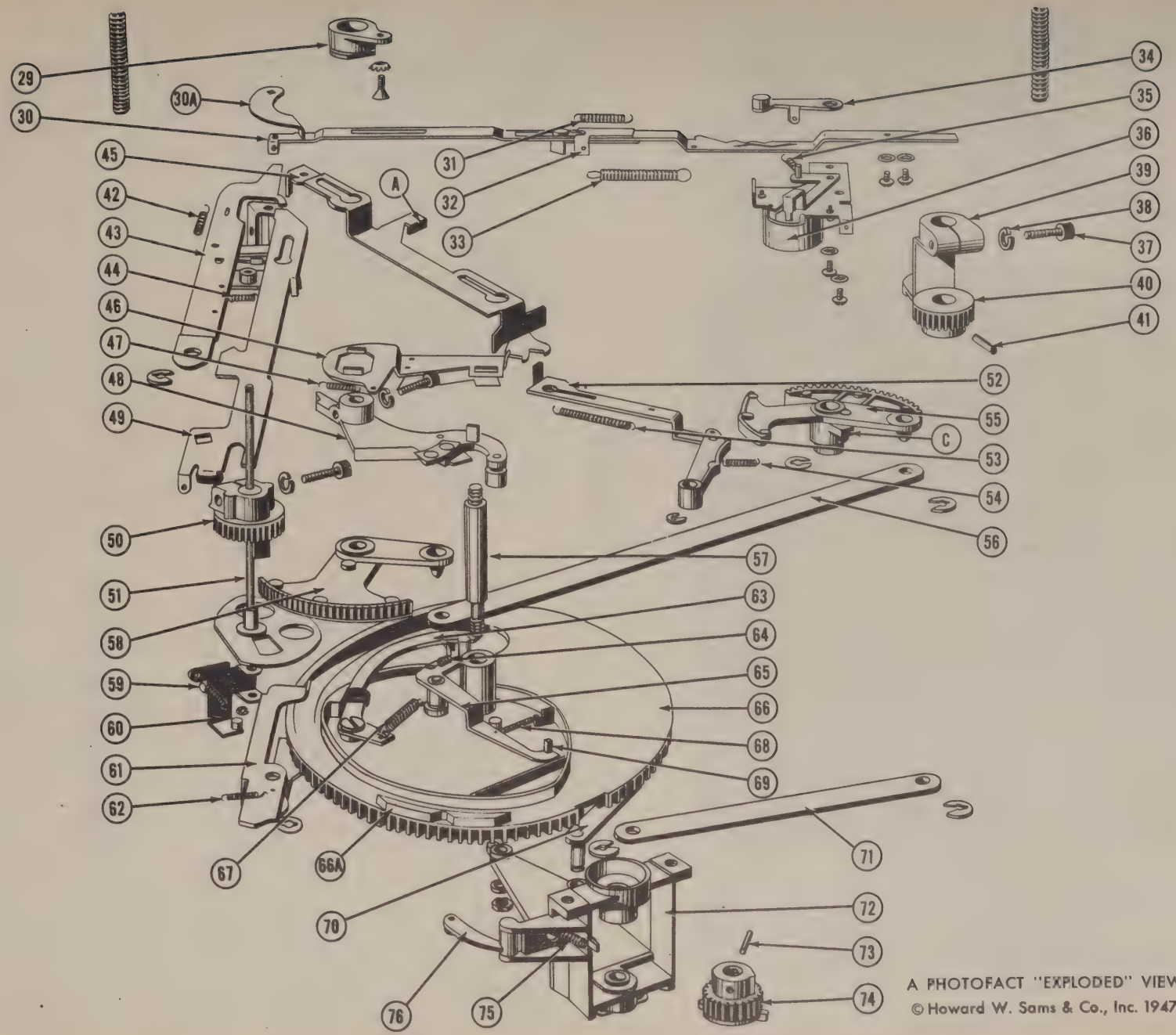

A PHOTOFACT "EXPLODED" VIEW

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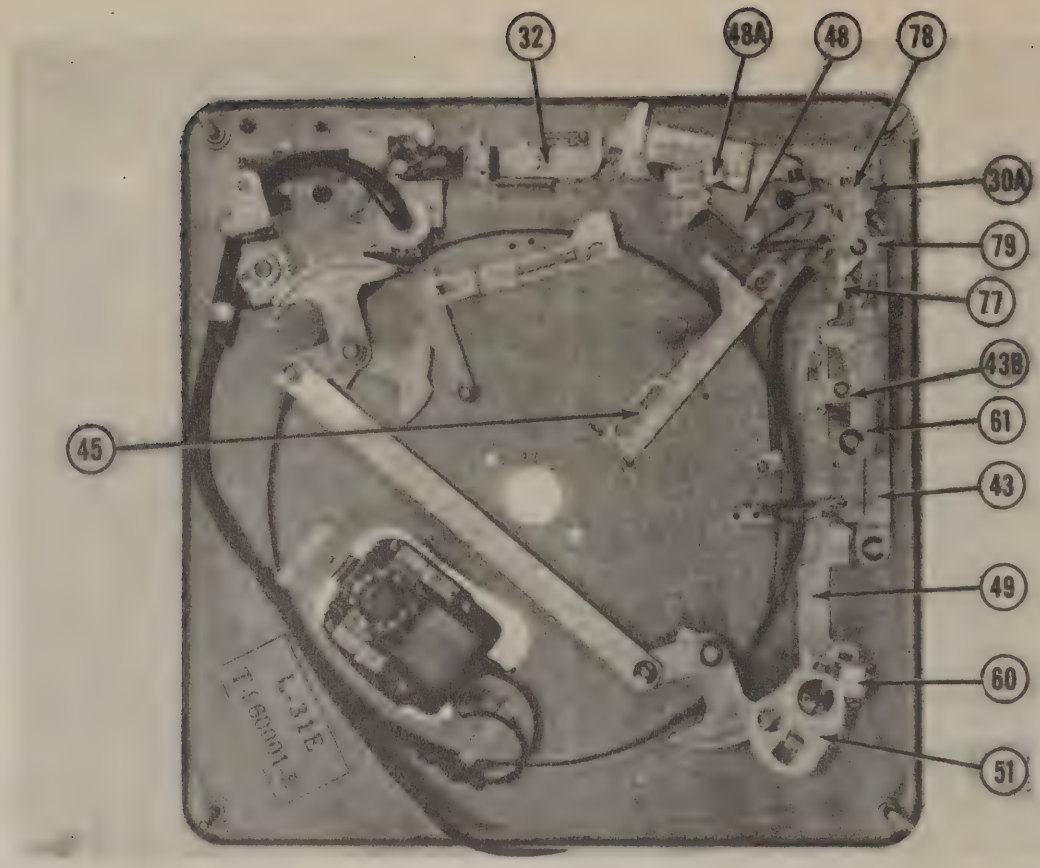


BOTTOM VIEW LESS MAIN CAM

ADJUSTMENTS

Pickup Arm Positioning

1. Set the control knob to "off" position (power plug out).

2. Place a 10-inch record on the turntable.

3. Set the selector arms for 10-inch position.

4. Loosen the Allen screw of the pickup arm lever (48) just enough to allow the lever (48) to still hold its position.

5. Pull control knob to "reject" and release; rotate the turntable clockwise until needle almost touches record. The needle should be approximately one-eighth inch from edge of record. Corrections may be made by slipping the pickup arm lever (48) slightly. Be sure there is sufficient vertical clearance in the pickup arm shaft to prevent binding before tightening the screw.

After tightening the set screw, check with several records of both sizes to be sure the adjustment is correct.

Pickup Arm Height

The height adjustment may be made by turning the adjusting screw (7). At maximum height during the change cycle, there should be approximately 1/16″ clearance between the pickup arm and the bottom of a record on the selector arms.

Needle Pressure

Needle pressure is controlled by the counterbalance spring (10). The pressure may be varied by moving the counterbalance adjusting slide (part of 12). The needle pressure should be not less than 1⅛ oz.

Selector Blades

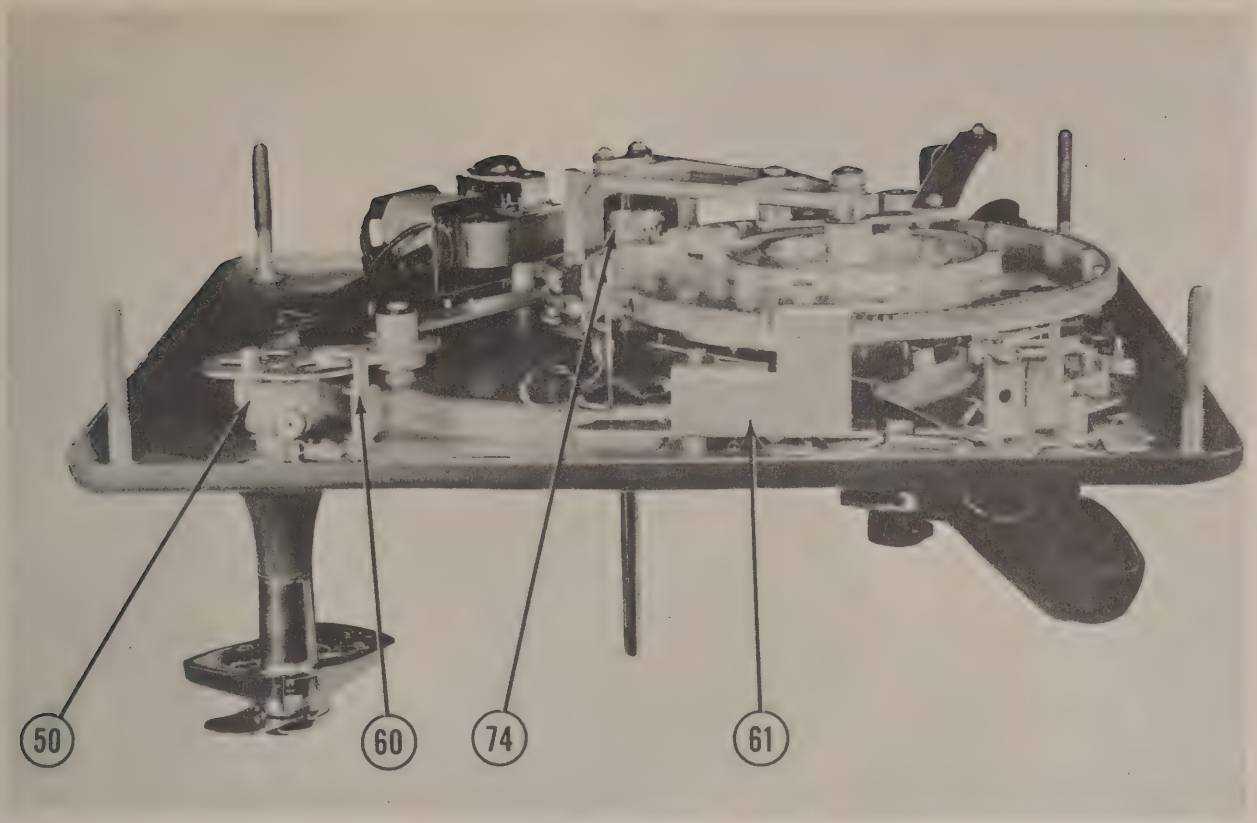
The leading edges of the blades must be smooth and rounded. They must be very free in their mounting so they will return to their normal position by their own weight. To adjust the selector blade, place a 10-inch record of average thickness (.074″) on the selector arms and manually rotate the turntable clockwise until the selector blade contacts the record. The blade must rise after it first comes in contact with the record. This rising is due to pressure applied to the leading edge of the blade. The blade may be adjusted by bending, very slightly, to correct position (use pliers with tape lined jaws). The height to which blades are set must be less than the minimum record thickness otherwise the blade will attempt to change two records at a time, due to the cam action which always operates in an up direction.

When necessary, make the same adjustment on the 12″ selector blades, using a 12-inch record (approximately .090″ thick).

Selector Arms

The selector arms must be parallel with each other, and synchronized so that a record will drop evenly from both arms. Set drive gear (66) in neutral position. Set selector arms for 10-inch position. Loosen the set screw of the drive crank (39); align the sleeve (21A) with the proper notch in the selector arm (16). Tighten the cap screw on the drive crank. With the mechanism set as described, the segment (55) and the post gear (40) are meshed so that stop (C) on segment (55) just clears the segment tie plate (56). The segment (58) which is connected to the segment tie plate is in fixed position by dimensions of the parts.

Post gear (50) must be properly related to the automatic shutoff cam (51). Four teeth should remain disengaged between segment (58) and the split in the post gear (50).



REAR VIEW

TROUBLES

Rumble

1. Rubber rim on idler wheel is worn or damaged.
2. Changer not properly floated on motor board:
   (a) Be sure shipping bolts have been removed.
3. The motor rotor may be knocked out of alignment.

Record Jams

1. Selector arms improperly set.
2. Odd-sized, badly warped, or damaged records. Play these in "Manual" position.
3. Selector blades damaged or improperly adjusted.

Record Drops from One Side Only

1. Center hole too large:
   (a) Play in manual position.
2. Check for bent spindle.
3. Selector arms out of adjustment.

More Than One Record Drops at a Time

1. Selector blades out of adjustment.

Needle Lands Incorrectly

1. Check adjustment of set-down point.
2. Retard lever spring (67) tension incorrect.
3. Locator spring (47) incorrect.

Needle Fails to Feed In

1. Booster spring of pickup arm locater (46) tension insufficient:
   (a) Bend for more tension.

Needle Slides Across First Few Grooves

1. Booster spring of the pickup arm locater (46) too strong.

Changer Fails to Trip

1. Trip shoe (48A) out of adjustment:
   (a) Adjust to trip at 1⅞" from center of record.
2. Not enough slack in pickup arm lead wire.
3. Clutch engagement lever (69) not unlatching:
   (a) Clean, but do not lubricate.
4. Check the trip lever (65) to see if it moves freely.

Changer Trips Continually

1. Clutch engagement lever (69) fails to latch:
   (a) Check trip lever (65) for bind or weak or missing spring.
2. Control knob binds in "reject" position.
3. Stop lever (76) fails to detent:
   (a) Check stop lever spring (75).
   (b) Check stop lever to see if it aligns with the detent in cam (66A).

Needle Does Not Set Down for 10-Inch Record

1. Check 12-inch reset slide spring.

LUBRICATION

Lubrication applied at the time of manufacture is usually sufficient for several years. If lubrication becomes necessary, use light oil on all shafts and spindle. Use light grease, such as Lubriplate, or its equivalent, on cam surfaces and gear teeth. *Do not* lubricate the clutch engagement lever or the idler wheel rim and turntable rim. Wipe off all excess lubricant; over lubrication is unwise.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	L-230140	Selector arm knob No. 2
2	L-230134	Selector blade 12″
3	L-230142	Shutoff selector bracket assembly
4	L-230137	Selector arm No. 2 and blade 10″ assembly
5	75042	1/4 x 10-32 Allen set screw
6	L-230210	Pickup arm
7	K-228238	Pickup arm adjusting screw
8		Hinge plate
9		Fulcrum and clamp
10	K-228099	Counterbalance spring
11	K-228199	Pickup arm lift pin
12	K-228144	Tone arm hinge assembly
	K-228150	Counterbalance adjusting slide
13	L-230133	Selector arm knob No. 1 assembly
14	L-230134	Selector blade 12″
15		Selector blade 10″ (part of 16)
16	L-230130	Selector arm No. 1 and blade (10″) assembly
17	71754	1/4 x 6-32 R.H.M.S.
18		Needle screw
19	K-228221	Pickup cartridge assembly
20	71752	3/16 x 4-36 R.H.M.S.
21	L-230118	Selector shaft No. 1 assembly
21A	L-230120	Selector shaft sleeve
22	L-230098	Turntable spindle assembly
23	L-230146	Turntable assembly
	L-230028	Control knob assembly
24	L-230163	Idler wheel (used with motor L-230161)
	L-230197	Idler wheel (used with motor L-230200)
	J-22143	Idler wheel (used with motor L-230231)
25	L-230028	Control knob assembly
26	L-230161	Motor
	L-230200	Motor
	L-230231	Motor
27	L-230136	Selector shaft No. 2
28	72130	Steel washer
29	L-230029	Pickup arm locator hub
30	L-230023	Control slide assembly
30A	K-228120	Connecting Link
31	J-22058	Manual lockout outer spring
32	B-27016	Manual lockout
33	K-228118	Manual lockout inner spring
34	L-230064	Detent arm assembly
35	L-230068	Detent arm spring
36	K-228213	Switch
	L-230060	Switch plate assembly

Ref. No.	Part No.	DESCRIPTION
37	71469	7/8 x 1/4-20 Allen head cap screw
38		Lockwasher
39	L-230126	Drive crank assembly
40	L-23148	No. 1 post gear
41	80035	5/8 x 3/0 taper pin
42	L-230043	Shutoff lever spring
43	L-230040	Shutoff lever
43A	L-230041	Shutoff dog
43B	L-230045	Shutoff trip
44	L-230047	Shutoff trip spring
45	L-230027	Manual reject slide
46	L-230031	Pickup arm locator
47	C-29130	Pickup arm locator and latch spring
48	L-230083	Pickup arm lever assembly
48A	K-228156	Trip shoe
49	L-230036	Shutoff slide
50	L-230125	Post gear No. 2
51	L-230121	Shutoff cam shaft assembly
52	L-230054	Reset lever assembly
53	L-230058	10-12″ set lever spring
54	J-22121	12″ reset slide spring
55	L-230089	Segment No. 1 assembly
56	L-230093	Segment tie plate
57	L-230102	Drive gear shaft
58	L-230091	Segment No. 2 assembly
59	L-230038	Shutoff slide spring
60	L-230033	Shutoff slide bracket assembly
61	L-230048	Shutoff bracket
62	L-230049	Shutoff bracket spring
63	L-230117	Pickup arm retard lever
64	B-27063	Trip dog spring
65	L-230113	Trip lever assembly
66	L-230109	Drive gear
67	B-27067	Retard lever spring
68	B-27092	Trip lever spring
69	L-230111	Clutch engagement lever
70	L-230103	Drive link assembly
71	L-230128	Drive link connecting rod
72	L-230095	Spindle housing assembly
73	80036	3/4 x 3/0 taper pin
74	L-230101	Pinion Gear
75	B-27048	Stop lever spring
76	B-27097	Drive gear stop lever assembly
77	L-230050	Pickup arm center latch
78	L-230051	Pickup arm inner latch
79	L-230052	Pickup arm outer latch

TOP VIEW

GENERAL INFORMATION

This changer is designed to play up to 10 twelve-inch or 12 ten-inch standard records at one loading. The last record is repeated until the changer is turned off. The trip mechanism is of the velocity type. Provision is made to lock out the trip mechanism for manual playing.

Manufactured by WEBSTER-CHICAGO, 5610 Bloomingdale Ave., Chicago 39, Illinois

THIS CHANGER HAS BEEN USED IN POSTWAR PRODUCTION BY THE FOLLOWING MANUFACTURERS:

Aero Sales Company	Dallas, Texas
Hoffman Radio Corporation	3430 S. Hill Street, Los Angeles, California
Howard Radio Company	1731 Belmont Avenue, Chicago, Illinois
Lewyt Corporation	60 Broadway, Brooklyn, New York
Link Radio Corporation	125 W. 17th Street, New York, New York
The Magnavox Company	2131 Bueter Road, Ft. Wayne, Indiana
Majestic Radio & Television Corp.	50th & Rockwell, St. Charles, Illinois
Promenette Radio & Television Corp.	1721 Elmwood, Buffalo, New York
The Rauland Corporation	4245 Knox Avenue, North, Chicago, Illinois
Stewart-Warner Corporation	1826 Diversey Parkway, Chicago, Illinois
Stromberg-Carlson Co.	100 Carlson Road, Rochester, New York
Trav-ler Radio Corporation	571 W. Jackson Boulevard, Chicago, Illinois
Trylon Radio Laboratories	3955 N. Broad, Philadelphia, Pennsylvania
Wells-Gardner & Company	2701 N. Kildare, Chicago, Illinois

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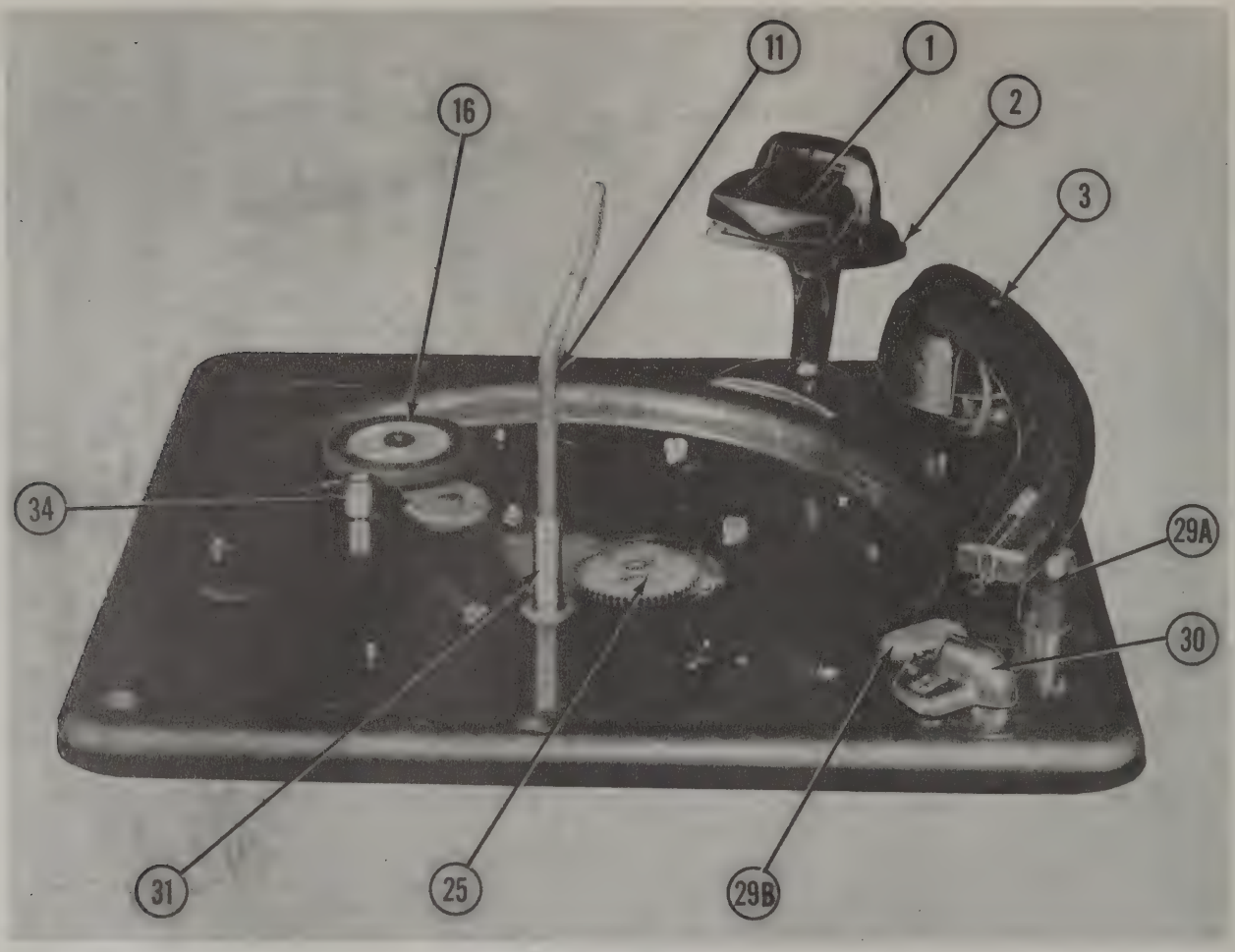
WEBSTER-CHICAGO
MODEL 50

WEBSTER-CHICAGO
MODEL 50



TOP VIEW LESS TURNTABLE

THE CHANGE CYCLE

The change cycle is started by a velocity trip mechanism. When the movement of the pickup arm toward the record spindle is greater than 1/8" in 1/2 revolution of the turntable, the mechanism is actuated. As the pickup arm moves toward the center of the record, it moves the automatic trip lever (51) with it, the lever being connected through a spring-loaded clutch to the pickup arm pivot (9). The trip lever (51) gradually approaches the velocity trip lever (47) and upon contact carries it with it. However, the main cam actuating gear (45) has four equally spaced projections on its circumference which strike the velocity trip lever roller (46) as the gear revolves and force the automatic trip lever and velocity trip lever back away from the tripping point. This does not affect the pickup arm because of the friction clutch. When the needle enters the eccentric groove upon completion of the record, the automatic trip lever moves at such a speed that it carries the velocity trip lever to the tripping point between projections on the main gear.

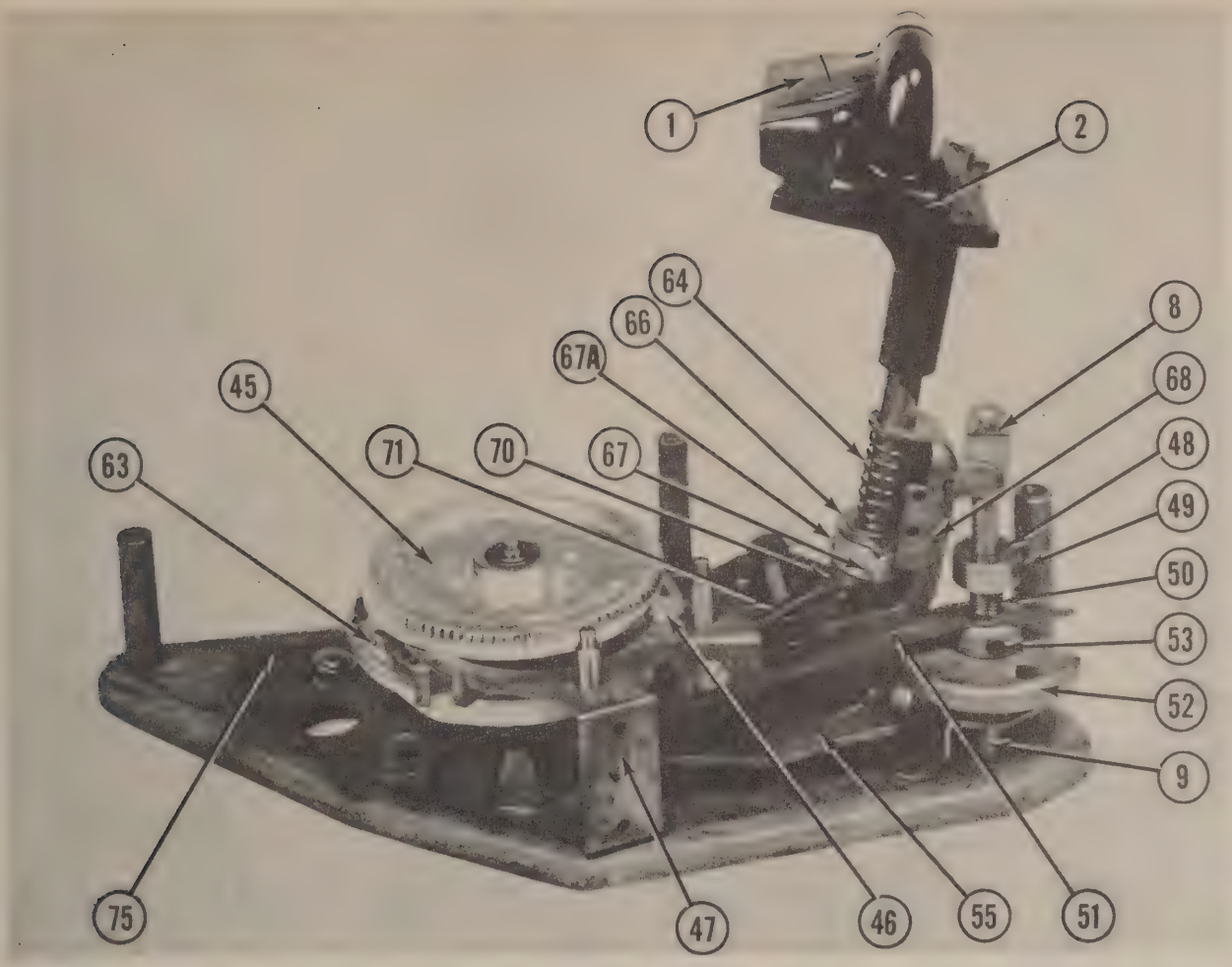
The velocity trip arm (47), when in position between cycles, holds the actuating pawl on the upper surface of the main cam (63) away from the track on the lower surface of the main cam actuating gear (45). When tripped, the velocity trip arm no longer holds the pawl but allows it to engage the gear and causes the cam to rotate with the gear.

The main actuating cam has two cam surfaces on its lower side. The inside cam surface forms a track in which the stud of the pickup arm raising lever (55) rides. The outer cam surface actuates the rocker arm assembly (68) by means of the rocker arm roller (69). As the cam rotates, the pickup arm raising lever pushes up on the pickup arm raising disc (52), raising the pickup from the record. The stud of the raising lever is now moved toward the center of the cam, moving the pickup out clear of the record stack. As the cam continues to rotate, the roller (69) of the rocker arm moves down the incline moving the record selector post toward the spindle to drop a record.

The stud on the raising lever now moves back away from the center of the cam, moving the pickup to the set-down position. This position is determined by the selector lever compression spring (71). When the selector post is turned to the 10-inch position, pressure is applied by this spring to cause the raising lever stud to follow the outer edge of its groove in main cam. With the record selector post in the 12-inch position, the spring is relaxed and the stud follows the inner edge of its groove. The stud now moves up an incline, allowing the pickup to come down on the record. At the same time, the roller on the rocker arm moves back up its incline, allowing the record selector post to move back to normal position.

During the rotation of the cam, the velocity trip lever has been reset by the projections on the main gear. Therefore, when the cam has completed one revolution the hook on the velocity trip lever catches the pawl and disengages the main cam from the cam actuating gear, completing the cycle.

Records may be rejected at any time by sliding the control knob to the reject position.



SUB ASSEMBLY FRONT VIEW

ADJUSTMENTS

Pickup Arm Height

The needle should clear the top record of a full stack on the turntable by approximately 1/8". Adjustment may be made by bending the pickup raising lever (55) at the bend just below the point of contact with the pickup raising disc. Do not attempt to adjust by moving the raising disc.

Set-down Adjustment

Normally, the set-down point may be adjusted by turning the eccentric pin (3) in the hinge. This pin is turned with a screwdriver and is reached through a hole in the top of the pickup arm. If this adjustment does not move the arm far enough, loosen the set screws (53) in the pickup arm raising disc (52), and turn the disc until the adjustment is correct. Use a standard 10-inch record and adjust for a set-down point 1/8" from the edge of record. Check the adjustment with a standard 12-inch record and make a compromise adjustment if necessary.

Record Selector Head Angle

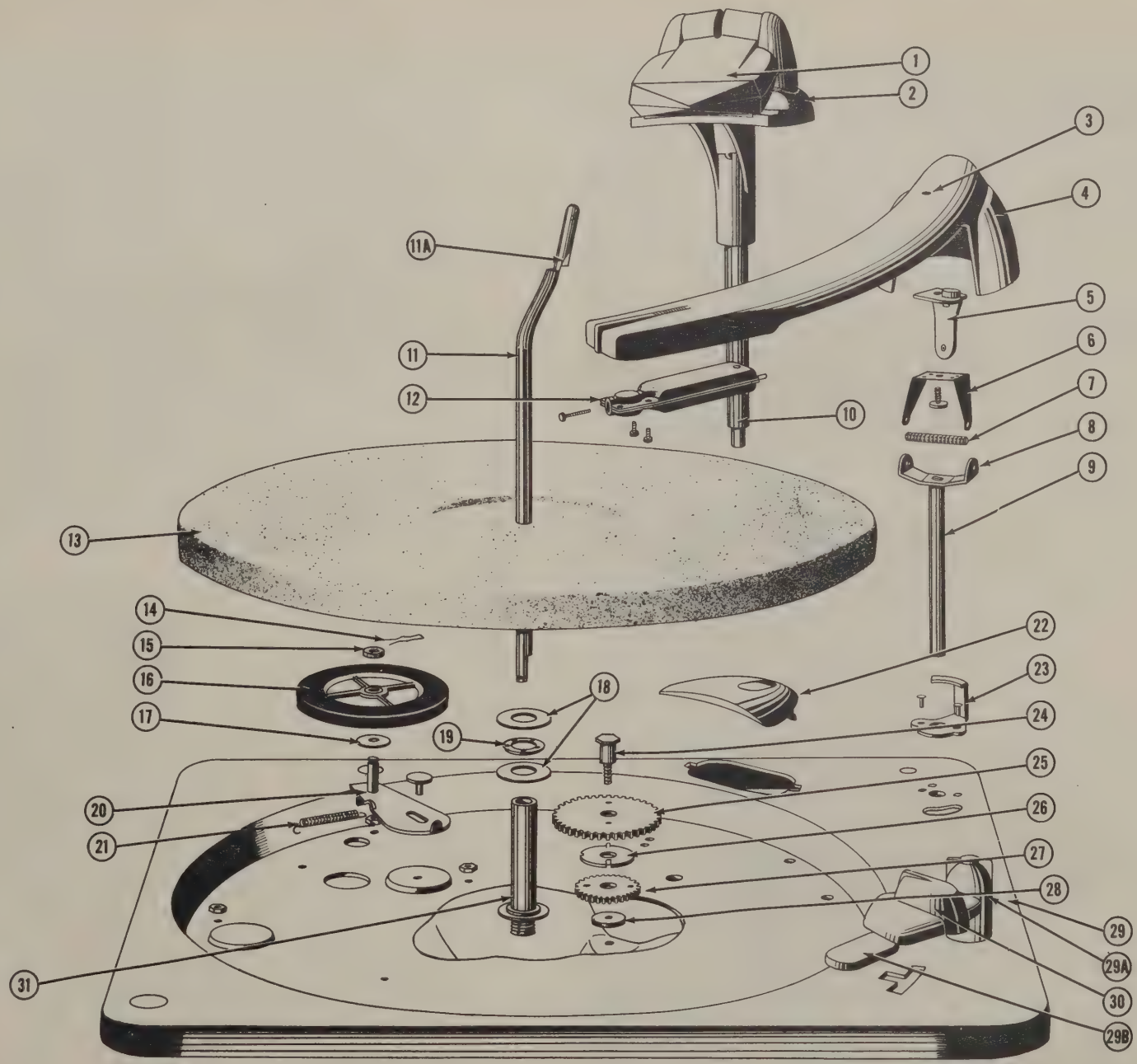
The record selector post head assembly should be adjusted so that the curve of the record shelf lines up with the edge of a record on the spindle. This may be adjusted, if necessary, by loosening the set screws (67A) in the selector lever collar (67) and turning the post to the proper angle.

Automatic Trip Friction Clutch

The collar (48), which adjusts the tension of the clutch spring, should be set at least 1/4" below the main base plate. A spring clip is frequently used instead of this collar. The spring tension should be just enough to operate the trip mechanism; too much tension will cause undue drag on the pickup arm. No oil or grease should be used on this clutch.

Velocity Trip and Roller Assembly

The hook which disengages the pawl from the main cam actuating gear should be adjusted for a clearance of five to fifteen mils below the actuating gear. Too much clearance may allow the pawl to bounce and re-engage.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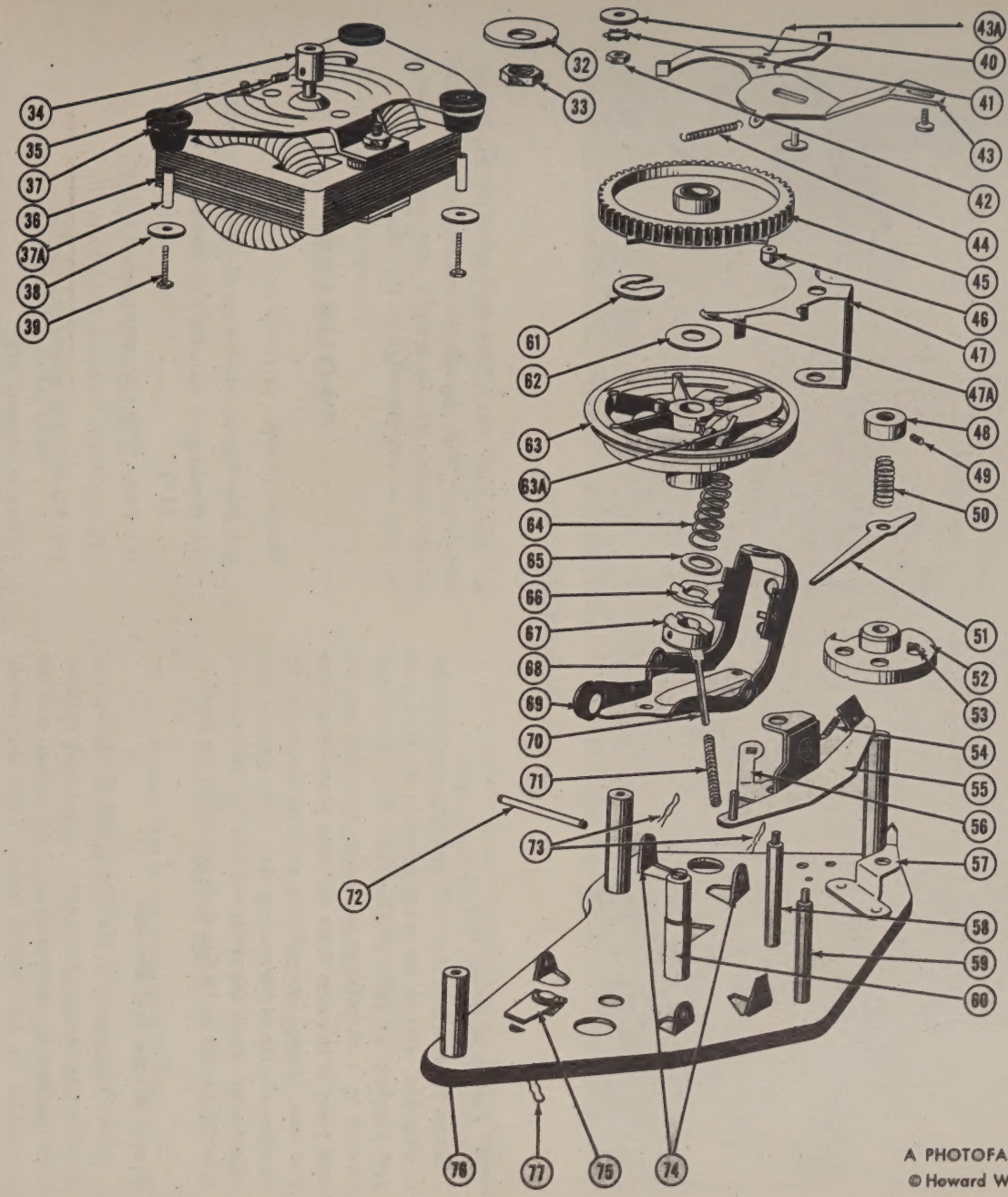

A PHOTOFACT "EXPLODED" VIEW

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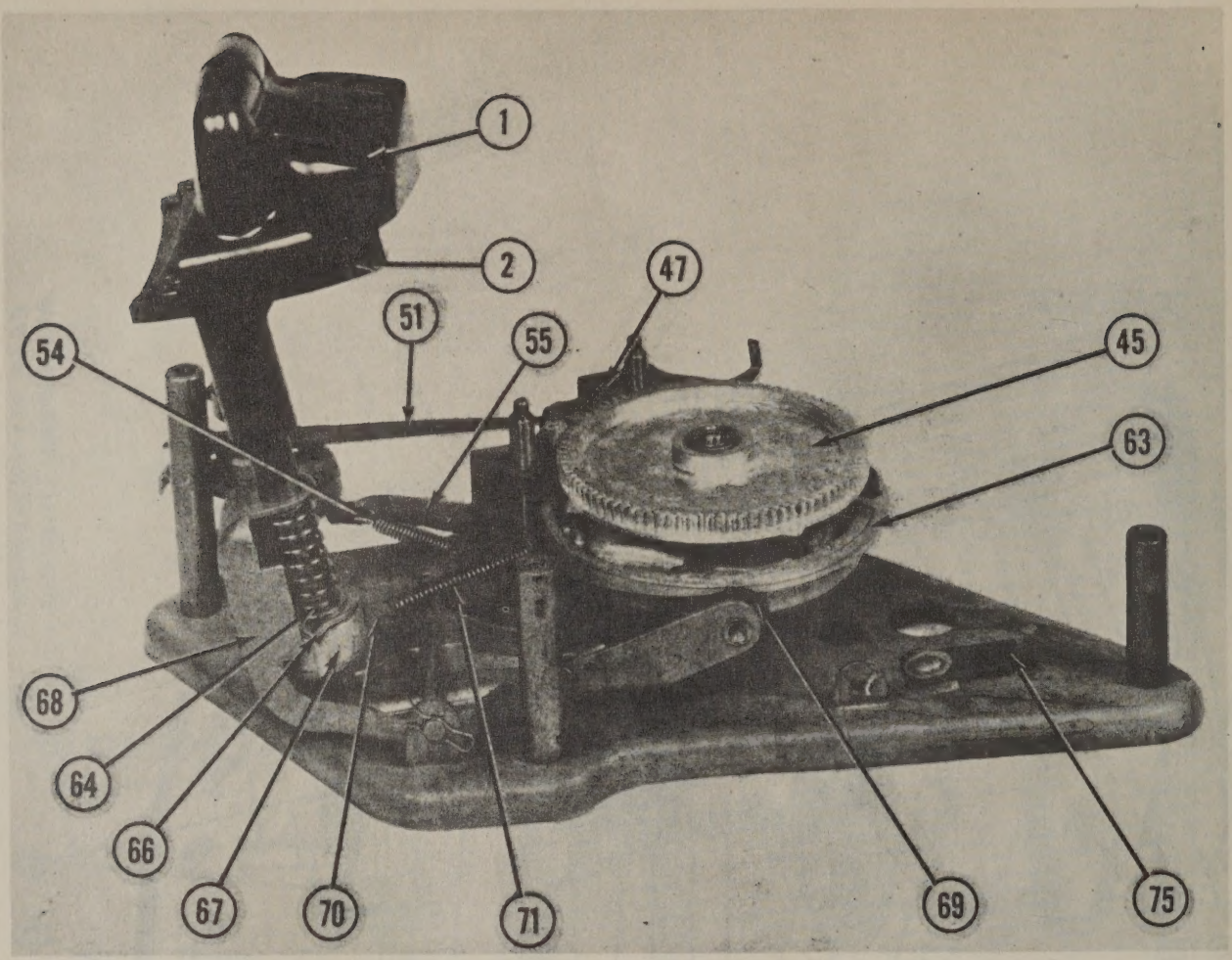


SUB ASSEMBLY REAR VIEW

"Off" Position of Pickup Arm

When the arm is in the "off" position, the lip of the raising disc rests in the space between the stud post and bracket. In early productions, this space was formed by a chamfered and grooved collar on the stud post. If the arm does not rest properly on the arm rest (29A), its position may be corrected by bending the lip of the raising disc. After making this adjustment, check the set-down on a 12" record to be sure that the lip of the disc does not strike the bracket.

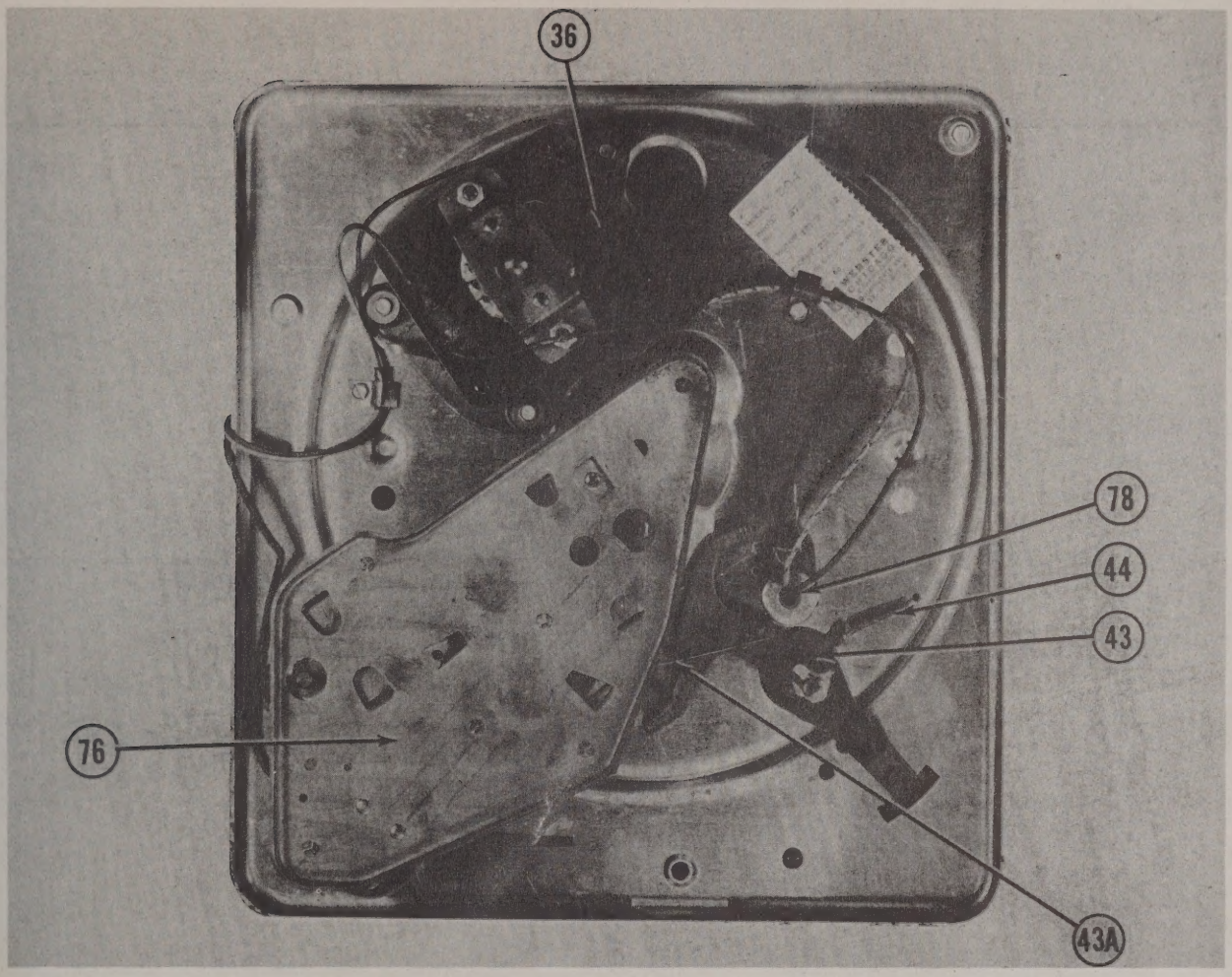
Record Selector Post Distance

At the beginning of the change cycle, the record selector post moves about 3/32" toward the spindle. This position is maintained until the pickup arm has completed its full lateral travel. Then the record selector post again moves toward the spindle causing the bottom record to drop into playing position. Early dropping will usually be caused by the selector post resting too far from the spindle. This allows the record to catch on the edge of the selector post instead of sliding on the ledge, and the initial movement of the post will drop the record.

To remedy this, wedge the rocker arm by inserting a screwdriver between the rocker arm pivot and the sub-plate stud. Then, with the heel of the hand, push the selector post toward the spindle until a standard record resting on the spindle step extends at least half way across the ledge on the selector post.

TROUBLES

1. Failure to trip:
   - (a) Insufficient tension on clutch spring (50).
   - (b) Binding in velocity trip and roller assembly (47).
   - (c) Pawl (63A) on main cam binding.
   - (d) Automatic trip arm (51) bent.
   - (e) Manual trip lever (43) binding.
2. Failure of Manual trip:
   - (a) Manual trip actuating spring (43A) bent or broken.
   - (b) Cam pawl (63A) binding.
   - (c) Velocity trip and roller assembly (47) binding.
3. Continuous Tripping:
   - (a) Too much clearance on hook (47A).



BOTTOM VIEW

(b) Hook bent and not engaging cam pawl (63A).

(c) Roller (46) on velocity trip assembly broken.

(d) Manual trip lever (43) binding.

4. Motor fails to shut off:

(a) Defective motor switch (78).

5. Spindle drops more than one record:

(a) Spindle latch (11A) sticking. Clean with carbon tetrachloride.

(b) Exceptionally thin records.

(c) Incorrect record selector spacing.

LUBRICATION

Lubrication should be sufficient for about a year of normal operation. When lubricating, be very careful not to allow oil or grease to come in contact with any rubber surfaces or the automatic trip arm clutch. If oil gets on any of these surfaces, it should be removed immediately with carbon tetrachloride:

1. Use No. 10 oil at the following points:

(a) Saturate felts on motor bearings.

(b) One drop each bottom bearing point, hole in bracket, and hole in main base plate for pick-up arm shaft.

(c) Turntable ball bearing assembly.

(d) Idler wheel felt washer.

2. Use Lubriplate on the following points:

(a) Idler wheel link (20).

(b) Turntable bearing stud (31).

(c) Pickup arm hinge pins (part of 8).

(d) Knife edge of raising lever (part of 55).

(e) Main cam bearing. Remove sub-plate assembly to gain access to this bearing.

3. Apply Sta-put to the following surfaces:

(a) Teeth of main cam actuating gear (45).

(b) Track of main cam.

(c) Teeth of fibre gears (25 and 27).

(d) Raising lever bracket (56) bearing surfaces.

(e) Selector lever stop (66).

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	49P037-C	Record clip
1A	46P126	Record clip spring
2	49X035-C	Record selector post assembly
3		Pickup arm set-down point adjustment pin
4	22G065	Pickup arm including hinge assembly
5		Pickup arm swivel (part of 4)
6		Pickup arm hinge (part of 4)
7	4P015	Spring, hinge spacing (not used before 375613)
8		Pickup arm shaft hinge (part of 9)
9	42X074	Pickup arm pivot shaft
	11X136	Pickup arm pivot shaft (for Prod. No. 375613 and after)
10		Record selector post (part of 2)
11	11X133	Record spindle
11A		Record spindle latch (part of 11)
12		Pickup cartridge (crystal)
13	11X138-C	Turntable with hub
14	50P125	Idler wheel retaining clip
15	25P030	Idler wheel felt washer
16	11X003	Idler wheel
17	25P046	Idler wheel fibre washer
18	25P269	Bearing race washer
19	11X058	Ball bearing
20		Idler wheel mounting link
21	46P112	Idler wheel tension spring
22		Record selector post escutcheon
23	45P191	Pickup arm lift stop bracket
24	41P333	Idler gear mounting screw
25	47P024	Large idler gear
26		Idler gear coupling
27	47P023	Small Idler Gear
28		Idler gear spacing washer
29		Main base plate
29A	42P144-C	Pickup arm rest
29B		Needle Pad
30	49X036-C	Control knob
31	41P414	Turntable bearing stud
32		Turntable bearing stud washer
33	26P687	Turntable bearing stud nut
34	17X412-1	Turntable drive sleeve—60 cycle
	17X412-4	Turntable drive sleeve—50 cycle
35		Set screw, drive sleeve
36	15X084-12	Motor, 105-125 volt, 50-60 cycle
37	25P281	Motor mounting grommet
37A	41P530	Motor mounting sleeve
38		Motor mounting washer
39	26P241	Motor mounting screw
40		Idler gear stud flat washer
41		Idler gear stud lock washer
42		Idler gear stud nut
43	11X083	Manual trip lever
43A		Manual trip lever actuating spring
44	46P117	Manual trip lever tension spring
45	11X032	Main cam actuating gear
46		Velocity trip lever roller (part of 47)
47	11X047	Velocity trip lever
47A		Velocity trip lever hook (part of 47)
48		Clutch spring tension collar
49		Clutch spring tension collar set screw
50	46P127	Clutch compression spring
51	45P345	Automatic trip lever
52	11X031	Pickup arm raising disc
53		Pickup arm raising disc set screw (2 used)
54	46P044	Raising lever tension spring
55	11X045	Pickup arm raising lever
56	11X044	Raising lever bracket
57		Pickup arm shaft bracket (part of 76)
58		Raising lever bracket pivot shaft (part of 76)
59		Velocity trip lever pivot shaft (part of 76)
60		Main cam and gear shaft (part of 76)
61		Main cam retaining clip
62		Main cam washer
63	11X033	Main cam assembly
63A		Main cam pawl (part of 63)
64	46P012	Selector shaft compression spring
65		Selector shaft compression spring washer
66	45P194	Selector lever stop
67	11X049	Selector lever collar assembly
67A		Selector lever collar set screw
68	11X086	Rocker arm assembly
69		Rocker arm roller (part of 68)
70		Selector lever (part of 67)
71		Selector lever compression spring
72	41P421	Rocker arm pivot pin
73	50-125	Rocker arm pivot pin clip
74		Rocker arm pivot ears
75		Record spindle cushion spring
76		Sub-plate assembly
77		Record spindle retaining clip
78		Motor switch